2020 PBR Progress Report

2017 – 2021 Performance Based Regulation

Water Services,
Wastewater Treatment Services,
and Drainage Services

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1 Executive Summary

This report provides an annual update to the City of Edmonton on the operational and financial results for the year ended December 31, 2020 for water services ("In-City Water"), wastewater treatment services ("Wastewater"), and sanitary and stormwater sewer services ("Drainage") provided within Edmonton by EPCOR Water Services Inc. ("EWSI"). The City of Edmonton City Council regulates In-City Water and Wastewater in accordance with the Performance Based Regulation ("PBR") Plan approved in the EPCOR Water Services and Wastewater Treatment Bylaw No. 17698 ("Bylaw 17698") and Drainage in accordance with the PBR Plan approved in EPCOR Drainage Services Bylaw No. 18100 ("Bylaw 18100").

1.1 Financial Performance

In-City Water, Wastewater and Drainage's financial performance for 2020 are summarized in Table 1.1 below[1]:

Table 1.1
Revenue and Return on Equity
($ millions)

		A	B	C	D
	Revenue and Return on Equity	2020		2017-2020*	
		PBR Forecast	Actual	PBR Forecast	Actual
1	**In-City Water**				
2	Revenue	214.2	203.4	808.1	774.6
3	Return on Equity	42.6	42.9	159.7	153.1
4	Rate of Return on Equity	10.18%	10.09%	10.18%	9.74%
5	**Wastewater**				
6	Revenue	112.6	105.4	410.1	391.4
7	Return on Equity	20.6	20.1	73.6	78.6
8	Rate of Return on Equity	10.18%	10.70%	10.18%	11.52%
9	**Drainage**				
10	Revenue	208.5	214.4	607.5	608.0
11	Return on Equity	19.1	30.3	76.7	90.0
12	Rate of Return on Equity	3.25%	4.96%	4.46%	5.03%

*2018-2020 for Drainage.

In 2020, In-City Water and Wastewater's revenues were significantly lower than forecast due to both low inflation, which affected rates adjustments and declines in commercial consumption as a result of the COVID-19 pandemic. Drainage revenues, which reflect scheduled rates from Bylaw 18100, were greater than forecast, with revenues from non-routine adjustments for SIRP and CORe more than offsetting declines in Sanitary Utility variable charge revenues.

[1] Consistent with the 2017-2021 PBR Application, all financial data in this report, including totals and sub-totals, are rounded to the nearest $0.1 million. This practice ensures continuity of data between tables and between years. However, the sum of the rounded detailed data in certain tables may not be equal to the related rounded total or sub-total.

In 2020, In-City Water achieved a 10.09% rate of return on equity (9.74% for 2017-2020), compared to its forecast rate of return of 10.175%. Operating expense reductions achieved by In-City Water ($10.1 million) were unable to fully offset reductions in revenue. The In-City Water mid-year rate base is $15.7 million (1.50%) higher than forecast, higher than forecast mid-year rate base also contributes to the lower rate of return on equity achieved in 2020.

In 2020, Wastewater achieved a 10.70% rate of return on equity (11.52% for 2017-2020), compared to its forecast rate of return of 10.175%. Lower than forecast operating expenses, combined with a lower than forecast rate base, more than offset reductions in revenue.

In 2020, Drainage achieved a 4.76% rate of return on equity (5.03% for 2018-2020), compared to its forecast rate of return of 3.25% (4.46% for 2018-2020). Lower than forecast operating expenses, lower interest expense due to one-time preferential financing from EUI and a lower than forecast rate base, more than offset reductions in revenue. As discussed in prior years' PBR Progress Reports, Drainage does not have a City of Edmonton-approved PBR forecast. Therefore, over the 2018-2021 period, Drainage's actual financial performance is compared to its 2018 EWSI budget, escalated at an appropriate inflation rate and adjusted for: (i) removal of one-time costs related to the transition of Drainage to EPCOR; and (ii) differences in basis of accounting between International Financial Reporting Standards (IFRS) and regulatory accounting.

Detailed analyses of In-City Water, Wastewater and Drainage's financial performance for 2020 and for the 2017-2020 period are provided in sections 2.3, 3.3, and 4.3, respectively.

1.2 Capital Expenditures

In-City Water, Wastewater and Drainage's capital expenditures for 2020 and updated forecasts the five-year term of the PBR Plan (the "2017-2021 PBR term") are summarized in Table 1.2 below:

Table 1.2
Capital Expenditures
($ millions)

		A	B	C	D	E	F
Capital Expenditures		**2020**		**2017-2020[1]**		**2017-2021**	
		PBR Forecast [2]	**Actual**	**PBR Forecast [2]**	**Actual**	**PBR Forecast [2]**	**Current Projection**
1	In-City Water	108.5	125.8	411.2	433.3	515.3	576.6
2	Wastewater	47.7	39.2	213.3	187.7	235.4	248.3
3	Drainage	215.5	236.1	527.5	481.9	780.6	747.5

[1]Drainage Forecast and Actual results only include 2018-2020, 2018 is the first full year of Drainage operation following the transfer to EPCOR in September 2017.

[2] Amounts include capital expenditures approved through Non-Routine adjustments.

Over the course of the PBR term, changes to capital programs are required to address unforeseen needs for repairs or rehabilitation, changes in regulatory or operational requirements, customer demands, and other external factors. These changes are coordinated through EWSI's Project Management Office and are authorized by EWSI's Capital Project Steering Committee, EPCOR Utility Inc.'s (EUI) Financial

Review Council, or EPCOR's Board of Directors, depending on the amount of the expenditure. EWSI also presents information on its capital programs, as well as business cases supporting significant new capital projects (i.e. not already included in the approved PBR application), to the Utility Committee throughout the year. The 2017-2021 forecasts presented above represents the most recent forecasts and do not reconcile entirely with that forecasts contained in the PBR applications as they were completed at an earlier point in time.

- **In-City Water's** 2017-2021 projected capital expenditures of $576.6 million are $61.4 million (11.9%) greater than the PBR forecast. Significant projects contributing to this variance include the E.L. Smith Solar Farm Project and Battery Storage System ($26.0 million), which is funded through the Special Rate Adjustment for Environmental Initiatives; changes to the scope of the Water D&T Facility Expansion Project, which adds an additional $6.5 million to its cost; and an increase in developer driven projects such as the Network PD Transmission Mains Program, Water Main Cost Sharing Program, and Water Service Connection Program ($25.5 million).

- **Wastewater's** 2017-2021 projected capital expenditures of $248.3 million are $12.9 million (5.5%) greater than the PBR forecast. The Gold Bar Wastewater Treatment Plant's aging infrastructure poses challenges to capital planning. Since the plant cannot be shutdown for maintenance, it is often difficult to accurately assess asset condition and the scope of rehabilitation needed before commencing work on a project. During preliminary engineering in 2017 and 2018, EWSI identified significant needs for repairs to critical infrastructure, such as sludge lines replacements, clarifier chain replacements, and structural rehab that had not been anticipated in the PBR forecast. EWSI reviewed design options and employed value engineering to reprioritize reliability and life cycle replacements. These efforts have ensured that changes to projections of the total cost of the 2017-2021 capital expenditures program have resulted in only a slight increase from the PBR forecast.

- **Drainage's** 2018-2021 projected capital expenditures of $747.5 million are $33.1 million (4.4%) less than capital expenditures included in the City Long Term Plan and approved Non-Routine Adjustments. This decrease reflects substantial shifts of projected costs between programs as Drainage continues to refine and reprioritize its overall capital expenditures program to address asset condition, mitigate the risk of failure, and maintain required service levels. These decreases are partially offset by higher capital expenditures on the Non-Routine Adjustment for CORe and $32.8 million in additional capital expenditure for a real estate consolidation initiative (a combined water and drainage facility – also referenced in water's capital expenditure section above)**.**

Detailed explanations for differences between capital expenditures in PBR forecast and EWSI's current projections are provided in Sections 2.4, 3.4 and 4.4.

1.3 Operational Performance

In-City Water's and Wastewater's operational performance is measured by the results of indices prescribed in Schedule 3 of Bylaw 17698 with each index consisting of one or more performance measures. Commencing in 2020, Drainage's operational performance is measured using PBR performance indices approved by City Council on February 19, 2020 as amendments to Bylaw 18100.

Drainage's new PBR metrics program is patterned after the Water and Wastewater PBR metrics and meets the requirements of the Letter of Intent developed for the transition of Drainage Services from the City to EPCOR

Operational performance under each index is measured independently on a point basis with 100 base points available if the standards for all performance measure indices are achieved. Bonus points are available for performance above standards and financial penalties are applied if EWSI does not meet the 100 base point standard.

In 2020, In-City Water exceeded the performance standards for all five of its performance measure indices, Wastewater exceeded the performance standards for all four of its performance measure indices, and Drainage exceeded the performance standards for three of its four performance measure indices. Detailed discussions of the performance measures making up each of the indices and operational performance highlights are provided in Section 2.5 for In-City Water, Section 3.5 for Wastewater, and Section 4.5 for Drainage. .

Table 1.3-1
2020 Performance Measures and Standards

		A	B	C	D	E	F
Performance Index		**In-City Water**		**Wastewater**		**Drainage**	
		Standard	**Actual Score**	**Standard**	**Actual Score**	**Standard**	**Actual Score**
1	Water Quality Index(1)	25.0	25.0	55.0	60.5	N/A	N/A
2	Customer Service Index	20.0	21.5	15.0	16.5	20.0	21.4
3	System Reliability and Optimization Index	25.0	28.5	15.0	16.5	35.0	33.5
4	Environmental Index(1)	15.0	16.5	N/A	N/A	30.0	33.0
5	Safety Index	15.0	16.5	15.0	16.5	15.0	16.5
6	**Aggregate Points Earned**	**100.0**	**108.0**	**100.0**	**110.0**	**100.0**	**104.4**

[1] Water Quality and Environmental are combined into one index for Wastewater's and Drainage's operational performance

1.4 Rates and Bill Comparisons

In 2020, the average monthly bill for In-City Water customers, based on 2020 average monthly consumption per residential customer of 14.7 m^3, was **$39.90,** an increase of 5.5% from 2019. This increase consists of the 1.7% inflation adjustment discussed in Section 2.3.1; Special Rate Adjustments for Environmental Initiatives (0.3%), Accelerated Programs (0.5%) and Rebasing (0.7%); and Non-Routine Adjustment approved in 2019 for the Lead Mitigation Strategy (1.1%), Leduc County Annexation (0.7%), and LRT related Water Infrastructure Relocations (0.4%).

The average residential customer's wastewater treatment bill in 2020, also based on monthly consumption of 14.7 m^3, was **$19.30**, an increase of 6.1% from 2019. This increase includes the 1.7% inflation adjustment, and the Special Rate Adjustment for rebasing of 4.4% needed to support Wastewater's 2017-2021 capital programs.

The average residential customer's drainage bill in 2020, again based on monthly consumption of 14.7 m^3, was **$37.95**, an increase of 6.4% from 2019. This increase consists of the annual 3.0% increase set

in Bylaw 18100, and Non-Routine Adjustments approved in 2019 for the Corrosion and Odour Reduction Strategy (1.6%), the Stormwater Integrated Resource Plan (1.5%), and LRT related Drainage Infrastructure Relocations (0.4%).

EWSI undertakes annual bill comparison surveys with various cities and local communities. Section 2.6 shows that EWSI's residential water rates are competitive with most of the cities and communities included in the comparison, with only Vancouver having significantly lower water rates. Drainage and Wastewater bills are more difficult to compare because of variations in the nature and extent of wastewater treatment, the inclusion of certain services in property taxes, and geographic and climatic factors which influence the level of investment in and approach to flood mitigation. Section 3.6 shows that Edmonton's combined Drainage and Wastewater Treatment bills are competitive with those of other cities and communities with similar geographic and climatic conditions. Commercial bill comparisons for both water and wastewater show similar results to residential water and wastewater bills.

1.5 Non-Routine Adjustments

Non-Routine Adjustments for In-City Water and Wastewater are defined in Bylaw 17698, and for Drainage in Bylaw 18100, as "items which are unusual, significant in size or nature, and beyond the scope of control of EWSI". Bylaws 17698 and 18100 allow EWSI to request adjustments to In-City Water, Wastewater and Drainage rates for Non-Routine Adjustments from the City Manager or City Council, depending on financial impact.

In 2019, EWSI received approval to increase In-City Water and Drainage rates for the following projects that qualified as Non-Routine Adjustments outlined in Bylaw 17698, Schedule 3, Section 5.0 for Water and Wastewater, or in Bylaw 18100, Schedule 3 Section 4.1 for Drainage. These non-routine adjustments were included in Drainage rates commencing January 1, 2020, January 1, 2021, and January 1, 2022, and In-City Water rates commencing April 1, 2020 and will be escalating by inflation less the productivity factor in April 1, 2021.

- **Lead Mitigation Strategy (In-City Water)** – On March 22, 2019, EWSI presented a new lead mitigation strategy to the Utility Committee. This strategy is designed to meet new Health Canada Guidelines that reduce the maximum concentration of lead in drinking water at the tap from 10 parts per billion to 5 parts per billion. On July 16, 2019, EWSI received approval to apply the Non-Routine Adjustments to In-City water rates commencing April 1, 2020 to recover the costs of implementing this strategy. The additional cost to an average residential In-City Water customer was $0.40 per month commencing April 1, 2020 (or a total of $10.91 over the 2017-2021 PBR term).

- **Leduc County Annexation (In-City Water)** – On November 27 2018, the Government of Alberta approved the City of Edmonton's annexation of 8,260 hectares from Leduc County. As part of the annexation, EWSI will acquire the existing water infrastructure within or required to service the annexed area, including a reservoir, pump house and booster station, as well as transmission mains and a small distribution system, at a cost of $9.5 million which is comprised of $7.8 million for the Discovery Park reservoir and the remainder for a pipeline and booster station. On November 7, 2019, EWSI received approval to apply the Non-Routine Adjustments to In-City Water rates commencing April 1, 2020 to recover the costs related to the annexation. The additional cost to the average

residential In-City Water customer was $0.26 per month commencing April 1, 2020 (or a total of $7.09 over the 2017-2021 PBR term).

- **LRT Relocations (In-City Water and Drainage)** – EWSI has identified work needed to accommodate water main, hydrant and sewer relocations for the West Valley Line and Metro Line Northwest Phase I LRT projects. On November 7, 2019, (Drainage) and December 23, 2019 (In-City Water) EWSI received approvals to apply the Non-Routine Adjustments to water rates for In-City Water customers commencing April 1, 2020 and to Sanitary Utility and Storm Water Utility rates for Drainage customers commencing January 1, 2020. The additional cost to the average residential In-City Water customer is $0.17 per month commencing April 1, 2020 ($4.64 over the 2017-2021 PBR term). The average monthly bill increase for residential Drainage customers is $0.14 per month commencing January 1, 2020, an additional $0.37 per month commencing in January 1, 2021, and an additional $0.31 per month commencing on January 1, 2022 (or a total of $10.26 over the 2018-2021 PBR term).

- **Stormwater Integrated Resource Plan (Drainage)** – On May 10, 2019, EWSI presented its Stormwater Integrated Resource Plan (SIRP) alternatives to the Utility Committee. The plan includes a mix of capital and operational program investments to mitigate flood risks across the City using a mix of grey and green infrastructure components installed within the public right-of-way or within City or EPCOR owned parcels. The SIRP approach allows for a lower overall capital investment than seen with traditional engineering approaches through the inclusion of operational programs that support the overall community in responding to flooding events. On December 2, 2019, EWSI received approval to apply the Non-Routine Adjustments to Storm Water Utility rates commencing January 1, 2020. The additional cost to the average residential Drainage customer is $0.51 per month commencing January 1, 2020, an additional $0.15 per month commencing January 1, 2021, and an additional $0.03 commencing January 1, 2022 (or a total of $16.11 over the 2018-2021 PBR term).

- **Corrosion and Odour Reduction Strategy (Drainage)** – On June 28 2019, EWSI presented its Corrosion and Odour Reduction Strategy to the Utility Committee. The Corrosion and Odour Reduction Strategy was developed using similar principles and approaches to EWSI's SIRP to determine an optimized mix of operational and capital solutions to reduce corrosion and odour. The strategy expands the previous plan by focusing on preventing the formation of hydrogen sulphide gas, which will reduce community odour impacts and lengthen the life of sewer network assets. Areas of focus within the strategy include: prevent the formation of hydrogen sulphide gas in the sewer system, control the release of air from the sewer system, and adapt the system using real-time monitoring technologies and improved inspection data. On December 2, 2019, EWSI received approval to apply the Non-Routine Adjustments to Sanitary Utility rates commencing January 1, 2020. The additional cost to the average Residential Drainage customer is $0.53 per month commencing January 1, 2020, an additional $0.42 per month commencing January 1, 2021, and an additional $0.06 per month commencing January 1, 2022 (or a total of $20.79 over the 2018-2021 PBR term).

Table 1.5 summarizes the average residential customer monthly bill impact for all Non-Routine Adjustments that have been approved for EWSI's In-City Water and Drainage customers over the 2017-2021 PBR term. These Non-Routine Adjustments include the five Non-Routine Adjustments detailed above, plus the negative Non-Routine Adjustment approved in 2018, passing on reductions in corporate shared service cost

allocations resulting from the transfer of Drainage Services assets to EPCOR to In-City Water and Wastewater customers. These Non-Routine Adjustments expire on March 31, 2022 at the end of the current PBR term.

Table 1.5
Monthly Residential Bill Impacts
Water and Drainage Approved Non-Routine Adjustments
(2017-2021 PBR Term)
($/month)

		A	B	C
	Non-Routine Adjustment	**2020**	**2021**	**2022* (Jan to Mar)**
1	Corporate Cost Reduction (Drainage Transfer)	(1.04)	(1.05)	(1.05)
2	Lead Mitigation Strategy	0.40	0.41	0.41
3	Leduc County Annexation	0.26	0.26	0.26
4	LRT Relocations	0.31	0.68	0.99
5	Corrosion and Odour Reduction Strategy	0.53	0.95	1.01
6	Stormwater Integrated Resource Plan	0.51	0.66	0.69
7	**Total Monthly Bill Impact**	**0.97**	**1.91**	**2.31**

* EWSI's current bylaws expire on March 31, 2022. New bylaws with updated rates would be in effect for the remainder of 2022.

2 In-City Water Services

2.1 Accomplishments and Challenges

In 2020, In-City water had significant accomplishments, including:

- Completion of Water's long term Integrated Resource Plan (IRP). The IRP encompasses: customer growth; changes to provincial regulatory frameworks; technology; asset management; and health, safety and environmental considerations. The IRP provides a roadmap for enabling EWSI's Water Treatment Plants and Distribution and Transmission operations to meet Edmonton's and surrounding community's future growth demands, while continuing to deliver safe and reliable drinking water;

- On August 27, 2020, EWSI received Decision 25770-D01-2020 from the AUC which will allow EWSI to construct and operate a 4MW battery energy storage system to increase the operational performance of the E.L. Smith Solar Farm by balancing supply and demand of electricity and serving as a backup power supply for the E.L. Smith Water Treatment Plant. This was followed by approval from Edmonton City Council for rezoning of the EPCOR-owned land for the Solar Farm project on October 19, 2020.

- Initial implementation of enhanced Lead Mitigation Program to reduce lead levels at the tap, including the addition of orthophosphate at the water treatment plants, as well as accelerated replacement of lead service lines (LSLs) from the water main to the meter inside the customer's home

- Execution of the Real Estate Consolidation Project. This project's overall objective is to leverage the natural operational synergies that exist between Water and Drainage to reduce the overall cost to customers through cost reduction and cost avoidance, while maintaining the service quality level that EWSI currently delivers, both during the transition to the single service center and in the long term. An important driver of cost minimization is synergies between Drainage Services and Water Services, some of which are only possible through consolidation. Cost reduction will be attainable by not having to fill vacancies created through attrition with consolidation. Cost avoidance anticipated with consolidation include improved and coordinated scheduling and planning of activities to reduce multiple trips to execute work. Additional operational benefits to be achieved over time include improved communications between engineering and field construction with staff being located in the same service centre.

- Between 2017 and 2020, EWSI completed a number of notable capital projects at both the water treatment plants and in the distribution and transmission system which have benefited EWSI's customers through improvements in overall safety and reliability of the water supply, safety improvements for EWSI's employees, improved environmental performance and expansion of the system in response to growing customer demands and City of Edmonton requests. These projects include:

- Significant upgrades at the Rossdale water treatment plant designed to improve the overall condition and increasing operational reliability and redundancy. These included upgrades to clarifiers, stilling basins, filter underdrains and air scour systems within the plant.

- Completion of the E. L. Smith Bypass Main Upgrade Project planned for 2021 to address the serious consequences of a failure of the ring main at E. L. Smith.

- Upgrades of various E. L. Smith and Rossdale chemical systems on a prioritized basis, including sodium bisulphite, sodium hypochlorite, ammonia and fluoride systems.

- Structural, mechanical and electrical upgrades and replacements to end-of-life and deteriorated structural components at Kaskitayo Reservoir.

- Replacement of 70 km of water mains during 2017-2021 through its various water main replacement programs to ensure reliability of the system is maintained. As a result of continued water main replacements, EWSI saw the lowest level of water main breaks since 1960 over the 2017-2021 period.

- Implementation of the Critical Pipeline Inspection program, inspecting critical transmission mains to more efficiently target weak points in the transmission system and further increase the reliability of the system.

- Expansion of the water distribution and transmission system as a result of the significant growth of the city of Edmonton over 2017-2021. This included adding 172 km of water mains by the end of 2020. EWSI has also continued its work with the City to relocate several water mains to accommodate City of Edmonton construction projects such as LRT expansions.

- Completion of the transfer of regional transmission pipelines and booster stations, including the Discovery Park Reservoir and the Southwest Pipeline and Booster Station at the end of 2020. The transfer of the of the Parkland Pipeline and Booster Station is planned for the 3rd quarter of 2021.

2.2 Customers and Consumption

In-City Water provides services to three customer classes: residential; multi-residential; and commercial (see Appendix A). These classes are unchanged from the previous PBR term and are described in detail in Appendix A. Customer counts, total annual consumption and monthly consumption per customer are shown in Table 2.2 below:

Table 2.2
Customers, Consumption and Consumption per Customer

		A	B	C	D
	Customers and Consumption	**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	**Customers**				
2	Residential	271,195	272,538	263,704	266,550
3	Multi-Residential	3,883	3,779	3,814	3,769
4	Commercial	20,018	19,846	19,636	19,720
5	**Total**	**295,096**	**296,163**	**287,154**	**290,039**
6	**Consumption per Customer** (m^3 per month)				
7	Residential	13.9	14.7	14.3	14.4
8	Multi-Residential	408.6	407.9	408.6	396.5
9	Commercial	118.7	89.9	121.1	108.1
10	**Annual Consumption** (ML)				
11	Residential	45,350.5	48,105.2	180,756.6	184,018.2
12	Multi-Residential	19,039.3	18,498.4	74,813.4	71,732.6
13	Commercial	28,524.5	21,407.1	114,127.1	102,304.9
14	**Total**	**92,914.3**	**88,010.6**	**369,697.0**	**358,055.7**

The factors contributing to actual to forecast differences for 2020 and for 2017-2020 differ by customer class, as explained below:

- **Residential.** Customer counts in 2020 are 0.5% greater than forecast, primarily because of higher than expected actual customer counts at the beginning of the 2017-2021 PBR term. In 2020, consumption per customer was 5.6% higher than forecast, primarily attributable to changes in consumption patterns as a result of the COVID-19 pandemic (more time spent at home). Over the 2017-2020 period actual consumption per customer is slightly higher then the PBR forecast, confirming the robust residential forecasting methodology developed for the 2017-2021 PBR forecast. The combined effect of these factors is that total residential consumption for 2020 is 5.6% higher than forecast (0.7% greater for 2017-2020).

- **Multi-Residential.** Customer counts are 2.7% less than forecasts, continuing trends seen in 2018 and 2019. Consumption per customer, although still less than forecast, strengthened significantly in 2020, largely due to the COVID-19 pandemic. Lower than forecast customer counts, combined with lower than forecast consumption per customer, meant that total multi-residential consumption was 2.8% less than forecast in 2020 (4.1% lower for 2017-2020).

- **Commercial.** The commercial class was significantly impacted by the COVID-19 pandemic in 2020. Total consumption in the commercial customer class was 25.0% lower than forecast (8.4% lower in 2019), while customer counts were 0.9% lower than forecast. Largely attributable to public health guidance and restrictions put in place throughout the pandemic (closed facilities, capacity/occupancy limits, travel restrictions, employees working from home, etc.) nearly all industries experienced a decrease in consumption in 2020. Over the 2017-2020 period total commercial consumption is 10.4% lower than forecast.

2.3 Financial Performance

In-City Water's net income is derived from the provision of water services within Edmonton's boundaries. Besides these services, EWSI provides water services to surrounding communities under bulk water supply agreements with regional water service commissions ("RWCG" or "Regional Customers"), and fire protection services to the City of Edmonton under a service agreement ("Fire Protection").

EWSI's water system is fully integrated, with services jointly provided to In-City Water, Regional Customers and Fire Protection. Therefore, in sections 2.3.1 to 2.3.7, operating costs, depreciation, rate base and capital expenditures are presented and analyzed on a total system basis. In-City Water's share of these expenses, as well as its returns on rate base, are calculated in accordance with a cost of service model developed jointly by EWSI, the regional water service commissions and the City of Edmonton, and are shown as separate line items on each applicable table. In-City Water's total revenue and revenue requirements are summarized in Table 2.3 below:

Table 2.3
In-City Water Revenue Requirements
($ millions)

		A	B	C	D
	Summary of Revenue Requirements	**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	In-City Water Rate Revenue[1]	209.1	198.7	788.1	753.2
2	In-City Water Revenue Requirement				
3	Operating expenses	110.4	100.3	425.1	395.8
4	Other revenue	(5.1)	(4.6)	(20.0)	(21.4)
5	Depreciation and amortization	29.6	30.8	110.7	112.1
6	Return on rate base financed by debt	30.4	29.4	114.7	113.5
7	Return on rate base financed by equity	42.6	42.9	159.7	153.1
8	In-City Water Revenue Requirement*	207.9	198.7	790.2	753.2
9	**Return on Rate Base Financed by Equity**	**10.18%**	**10.09%**	**10.18%**	**9.74%**

[1] In the PBR forecast, rebasing and other special rate adjustments have been smoothed over the PBR term. Therefore, although forecast revenue is equal to the revenue requirement over the 2017-2021 PBR term, in any year within the PBR term, forecast revenue may be greater or less than the revenue requirement.

2.3.1 Revenue

In-City Water's rate revenues include fixed monthly services charges which vary by meter size and consumption charges applied to each cubic meter of water consumed. Besides rate revenue, In-City Water revenues also include other revenue derived from temporary services, connection fees, water permits, late payment charges and other incidental services. Table 2.3.1-1 below provides a comparison of 2020 In-City Water revenues to the PBR forecast:

Table 2.3.1-1
In-City Water Revenue
($ millions)

		A	B	C	D
	In-City Water Revenue	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Fixed Monthly Service Charges				
2	Residential	25.5	24.4	95.1	88.9
3	Multi-Residential	1.6	1.5	5.9	5.5
4	Commercial	4.7	4.4	17.5	16.3
5	Fixed Monthly Service Charges	31.7	30.4	118.4	110.7
6	Consumption Charges				
7	Residential	104.5	107.0	395.6	390.7
8	Multi-Residential	33.0	31.4	123.4	116.7
9	Commercial	39.8	29.9	150.7	135.2
10	Consumption Charges	177.3	168.4	669.6	642.5
11	In-City Water Rate Revenue	209.1	198.7	788.1	753.2
12	Other Revenue	5.1	4.6	20.0	21.4
13	**Total In-City Water Revenue**	**214.2**	**203.4**	**808.1**	**774.6**

In-City rate revenues were $10.3 million less than forecast in 2020, and $34.8 million less than forecast over the 2017-2020 PBR period. This difference is attributable to the following factors:

- Lower than forecast inflation resulted in a $5.4 million decrease in 2020 ($16.4 million for 2017-2020). The PBR plan limits Water and Wastewater's annual routine rate adjustments to inflation less an efficiency factor (see Appendix A.1). As shown in Table 2.3.1-2, actual PBR inflation adjustments for 2020 and 2017-2020 are significantly less than forecast. The effect of lower than forecast inflation from 2016 to 2020 will continue to impact revenues throughout the remainder of the 2017-2021 PBR term.

Table 2.3.1-2
2020 PBR Inflation Adjustment

		A	B	C	D
	PBR Inflation Adjustment to In-City Water and Wastewater Rates	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Forecast Inflation				
2	CPI	2.20%	1.80%	9.09%	8.24%
3	Labour	2.40%	2.10%	9.95%	6.87%
4	Weighted Inflation (65% CPI, 35% Labour)	2.27%	1.91%	9.39%	7.76%
5	Less: Efficiency Factor	-0.25%	-0.25%	-1.00%	-1.00%
6	Forecast Inflation	2.02%	1.66%	8.39%	6.76%
7	Actual to Forecast Inflation Adjustment	-	0.08%	-	-1.64%
8	**PBR Inflation**	**2.02%**	**1.74%**	**8.33%**	**4.96%**

- Lower than forecast consumption (see Section 2.2) resulted in a $4.5 million decrease in 2020 revenues ($13.8 million for 2017-2020). These decreases were partially offset by slight increases in customer counts which resulted in a $0.1 million increase in revenue in 2020 ($1.0 million for 2017-2020); and

- Non-Routine Adjustments to water rates decreased revenues by $0.5 million in 2020 ($5.6 million for 2017-2020). This includes a negative Non-Routine Adjustments which fulfills EPCOR's commitment to the City to flow the benefits of any reductions in corporate shared service cost allocations resulting from the transfer of Drainage Services assets to EPCOR to In-City Water and Wastewater customers, and is partially offset positive by Non-Routine Adjustments for the Lead Mitigation Strategy, Leduc County Annexation, and Water LRT Relocations, which were approved in 2019.

Besides rate revenues, In-City Water earned $4.6 million in other revenue in 2020, $0.5 million lower than forecast ($1.3 million greater for 2017-2020). This decrease includes $0.3 million in lower late payment penalties largely attributable to the 90 day utility bill deferral program which was implemented to help customers during the early stages of the COVID-19 pandemic.

2.3.2 Operating Expenses by Function

Table 2.3.2 below provides a comparison of EWSI's total water system operating expenses for 2020 to the PBR forecast.

Table 2.3.2
Water Operating Expenses by Function
($ millions)

		A	B	C	D
	Function and Sub-function	**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	Power, Other Utilities and Chemicals				
2	Power and Other Utilities	14.7	11.2	55.1	43.1
3	Chemicals	7.6	10.3	29.5	38.3
4	Power, Other Utilities and Chemicals	22.3	21.5	84.6	81.4
5	Water Operations				
6	Water Treatment Plants	20.0	21.4	77.6	76.8
7	Water Distribution and Transmission	26.1	21.0	101.4	99.9
8	Operational Support Services	7.7	5.9	30.0	26.7
9	Quality Assurance and Environment	6.7	6.3	25.2	25.2
10	Capitalized Overhead Costs	(7.6)	(8.3)	(29.3)	(31.2)
11	Water Operations	53.0	46.3	204.9	197.4
12	Billing, Meters and Customer Service				
13	Billing and Collections	8.7	9.3	33.0	32.8
14	Meter Reading, Repairs and Maintenance	2.8	2.6	11.9	8.7
15	Customer Service	0.8	0.3	3.2	2.1
16	Billing, Meters and Customer Service	12.4	12.2	48.1	43.6
17	EWSI Shared Services				
18	EWSI Shared Services	10.4	10.6	40.3	38.4
19	Incentive and Other Compensation	3.3	4.8	12.9	13.8
20	EWSI Shared Services	13.7	15.4	53.3	52.3
21	Corporate Shared Services	15.9	12.1	61.8	49.1
22	Franchise Fees and Property Taxes				
23	Franchise Fees	16.3	15.5	62.1	59.3
24	Property Taxes	0.5	0.4	1.8	1.1
25	Franchise Fees and Property Taxes	16.8	15.9	63.9	60.4
26	**Total Operating Expenses by Function**	**134.1**	**123.3**	**516.4**	**484.2**
27	In-City Water Share - %	82.3%	81.3%	82.3%	81.7%
28	**In-City Water Share - $**	**110.4**	**100.3**	**425.1**	**395.8**

Overall, total operating expenses for 2020 were $10.8 million lower than the PBR forecast, and $32.2 million lower over the 2017-2020 PBR period. Key factors contributing to this difference include:

- **Power and Other Utilities** – $3.5 million less than forecast in 2020 ($12.0 million less for 2017-2020) due to lower than forecast power prices ($1.6 million in 2020 and $6.3 million for 2017-2020) and $1.9 million in savings associated with the green power premium ($5.7 million for 2017-2020) that was included in the PBR forecast. The PBR forecast included annual renewable (green power) power purchases of $1.9 million annually, starting in 2018. Rather than purchasing locally produced renewable energy, EWSI plans to construct a solar farm on land adjacent to the E.L. Smith water treatment plant. In the 2022-2026 PBR Application revenue collected through the Green Power Special Rate Adjustment has been treated as a contribution toward the E.L. Smith Solar Farm Project, which will decrease EWSI's revenue requirement and customer bills in the 2022-2026 PBR term.
- **Chemicals** – $2.7 million greater than forecast in 2020 ($8.8 million greater than forecast for 2017-2020). In 2020, higher than average precipitation (surface run off) resulted in unusually high colour in the river over the summer months requiring the use of more chemicals (alum, carbon, and caustic soda) in the water treatment process. Higher than forecast costs for the 2017-2020 PBR period are also attributable to unexpected changes in river water quality, including early spring run offs and high colour in the fall.
- **Water Treatment Plants** – $1.4 million greater than forecast in 2020 ($0.8 million less than forecast for 2017-2020). Higher than forecast costs in 2020 are attributable to several factors, including: higher salary costs of $1.6 million attributable to an increase in head count ($3.5 million higher than forecast 2017-2020); higher staff costs of $0.6 million for facility operations transferring from Supply Chain Management to Water Treatment Plants in 2020; and higher contractor costs of $0.6 million related to snow removal and chemical room cleaning ($0.5 million higher than forecast 2017-2020). Higher labour costs are partially offset by a higher than forecast proportion of internal labour working on capital projects, which increased capital recoveries by $1.1 million ($3.6 million higher for 2017-2020), and reductions in fringe benefit costs, primarily due to lower pension contribution rates, which provided savings of $0.4 million ($1.8 million lower than forecast 2017-2020). The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.
- **Water Distribution and Transmission** – $5.1 million lower than forecast in 2020 ($1.5 million lower for 2017-2020). Lower than forecast costs in 2020 are attributable to several factors, including: a change in accounting treatment resulting in capitalization of valve and service replacement work which was previously expensed, which reduced operating expenses by $3.3 million; reductions in fringe benefit costs of $0.9 million, primarily due to lower pension contribution rates ($3.4 million for 2017-2020); lower staff costs of $0.6 million ($0.3 million less for 2017-202) due to vacancies; and an increase in the recovery of fleet costs attributable to an increase in capital work of $0.5 million in 2020 ($1.2 million for 2017-2020). The 2017-2020 variance also includes higher than forecast costs attributable to seasonal freeze-thaw cycles in 2017 and 2018 combined with a colder than average winter in 2019 which resulted in higher than normal volumes of emergency repairs (main breaks and frozen services) over the 2017 to 2019 period. Higher emergency repairs resulted in increased overtime costs of $2.1 million, higher contractor costs of $3.5 million, and additional material costs of $1.7 million. The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.

- **Operational Support Services** – $1.8 million less than forecast in 2020 ($3.3 million less for 2017-2020). The 2017-2020 variance in this function is primarily attributable to lower staff costs of $1.1 million related to vacant positions within the Project and Asset Management functions, $0.8 million for the Knowledge Management function which transferred to Corporate Shared Service in 2019, and $0.6 million for facility operations transferring from Supply Chain Management to Water Treatment Plants in 2020, combined with lower than forecast legal costs of $0.7 million, as less external legal support was required.
- **Billing, Meters, and Customer Service** – $0.2 million less than forecast in 2020 ($4.5 million less for 2017-2020). Meter reading process improvements provided savings in staff costs of $1.1 million ($3.7 million less for 2017-2020). Other cost savings included $0.2 million in lower billing and customer service charges from EPCOR Energy Alberta ($1.0 million less for 2017-2020), and $0.4 million for lower Drainage Counter service fees ($0.4 million less for 2017-2020). This is offset by a higher bad debt expense of $0.8 million ($0.8 million higher for 2017-2020), largely attributable to the COVID-19 pandemic, and higher lease costs of $0.7 million related to end of lease obligations at the Montrose facility ($0.3 million higher for 2017-2020). The remainder of the actual to forecast difference consists of numerous small items, none of which are individually significant.
- **EWSI Shared Services** – $1.6 million higher than forecast in 2020 ($1.0 million less than forecast for 2017-2020). Higher than forecast costs in this category reflect a $0.2 million increase in business unit allocations ($1.9 less for 2017-2020) and higher than forecast incentive compensation of $1.4 million ($0.9 higher for 2017-2020).
- **Corporate Shared Services** – $3.8 million less than forecast in 2020 ($12.6 million less than forecast for 2017-2020). These differences reflect both the reduction in corporate shared services cost allocations resulting from the transfer of Drainage from the City of Edmonton to EPCOR, which are fully offset by the non-routine adjustment to rates described in Section 2.1.1, as well as cost savings in EUI's corporate functions**.**
- **Franchise Fees and Property Taxes** – $0.9 million less than forecast in 2020 ($3.5 million less than forecast for 2017-2020). Lower than forecast revenue resulted in a $0.9 million reduction in franchise fees in 2020 ($2.8 million for 2017-2020). The 2017-2020 variance includes lower than forecast property taxes relate to the deferral of the Distribution and Transmission facility which had been expected to increase Water Services property taxes by $0.2 million annually commencing in 2017. A new shared facility for Water Distribution and Transmission and Drainage was purchased in 2020.

Variances in other operating expense functions and sub-functions are not significant, either individually or in aggregate.

In 2020, In-City Water's share of operating expenses was $100.3 million (81.3%), compared to $110.4 million (82.3%) in the PBR forecast. This result reflects both lower total operating expenses for EWSI's total water system and a 1.0% decrease in In-City Water's share of operating expenses determined through the cost of service model.

2.3.3 Operating Expenses by Cost Category

Table 2.3.3 below shows operating expenses by cost category for Water Operations, Billing Meters and Customer Service, and EWSI Shared Services, where cost categories differ from the sub-functions in Section 2.3.2.

Table 2.3.3
Water Operating Expenses by Cost Category
($ millions)

		A	B	C	D
	Cost Category	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Water Operations				
2	Staff Costs and Employee Benefits	43.1	38.8	167.3	159.1
3	Contractors and Consultants	8.2	7.7	30.7	33.5
4	Vehicles	1.6	0.3	6.1	3.9
5	Materials and Supplies	3.2	3.8	12.5	14.8
6	Other	4.5	4.1	17.6	17.3
6	Capitalized Overhead Costs	(7.6)	(8.3)	(29.3)	(31.2)
7	Water Operations	53.0	46.3	204.9	197.4
8	Billing, Meters and Customer Service				
9	CUS Charges	8.7	9.3	33.0	32.8
10	Staff Costs and Employee Benefits	7.1	5.9	27.5	23.8
11	Contractors and Consultants	0.5	0.0	2.1	1.2
12	Vehicles	0.3	0.2	1.2	0.8
13	Other	0.6	1.3	2.2	2.7
14	Meter Reading Services (Recoveries)	(4.9)	(4.6)	(17.9)	(17.7)
15	Billing, Meters and Customer Service	12.4	12.2	48.1	43.6
16	EWSI Shared Services				
17	EWSI Shared Services Allocation	10.5	10.3	40.6	38.4
18	Staff Costs and Employee Benefits	3.3	4.7	13.0	13.9
19	Contractors and Consultants	0.2	0.2	0.8	0.6
20	Other	(0.3)	0.2	(1.1)	(0.6)
21	EWSI Shared Services	13.7	15.4	53.3	52.3

The information presented in this table supports the explanations of differences between 2020 actual and forecast expenses provided in Section 2.3.2. Accordingly, no additional explanations are considered necessary.

2.3.4 Depreciation and Amortization

EWSI total system depreciation expense and amortization of contributed assets for 2020 are shown in Table 2.3.4 below:

Table 2.3.4
Water Depreciation and Amortization
($ millions)

		A	B	C	D
	Depreciation and Amortization	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Gross depreciation expense	47.5	50.7	179.6	184.9
2	Amortization of contributions	(10.0)	(11.5)	(39.4)	(42.7)
3	**Depreciation, net**	**37.5**	**39.2**	**140.2**	**142.2**
4	In-City Water Share - %	79.1%	78.6%	78.9%	78.9%
5	**In-City Water Share - $**	**29.6**	**30.8**	**110.7**	**112.1**

Depreciation expense and amortization of contributions are both higher than forecast reflecting higher than forecast levels of developer-funded assets, explained in Section 2.3.5 below. These impacts are offsetting, so actual depreciation expense, net of amortization, is within $1.7 million of forecast. This increase in depreciation expense is driven by higher than forecast capital expenditures as discussed in Section 2.4.1.

In-City Water's share of 2020 depreciation expense is 0.4% lower than forecast, 1.0% of this difference is attributable to higher than forecast assets additions for fire protection related assets (hydrants). The offsetting 0.6% difference is consistent with actual to forecast differences in the base and max day peaking factors used to allocate depreciation expense between In-City customer classes versus that charged to the RWCG.

2.3.5 Rate Base

In 2020, EWSI's total water system rate base, shown in Table 2.3.5 below, was $34.9 million more than forecast, with the higher than forecast gross rate base partially offset by higher than forecast contributions.

Table 2.3.5
Water Mid-Year Rate Base
($ millions)

		A	B
	Components of Mid-Year Rate Base	2020	
		PBR Forecast	Actual
1	Plant in Service		
2	Balance, beginning of year	2,439.3	2,545.4
3	Additions - EPCOR-funded	94.4	119.2
4	Additions - Developer-funded	7.3	33.8
5	Retirements and adjustments	-	(10.4)
6	Balance, end of year	2,541.0	2,688.0
7	Mid-Year Plant in service	2,490.2	2,616.7
8	Accumulated Depreciation		
9	Balance, beginning of year	650.9	633.8
10	Depreciation expense	47.5	50.8
11	Retirements and adjustments	-	(10.2)
12	Balance, end of year	698.4	674.4

	Components of Mid-Year Rate Base	A	B
		2020	
		PBR Forecast	Actual
13	Mid-Year Accumulated Depreciation	674.7	654.1
14	Other Rate Base Items		
15	Working Capital	23.4	22.5
16	Materials and Supplies	2.9	4.0
17	**Gross Mid-Year Rate Base**	**1,841.8**	**1,989.1**
19	Contributions		
20	Balance, beginning of year	693.9	795.9
21	Contributions in aid of construction	7.3	33.8
23	Balance, end of year	701.2	829.7
24	Mid-Year Contributions	697.6	812.8
25	Accumulated Amortization		
26	Balance, beginning of year	178.0	180.1
27	Amortization of contributions	10.0	11.5
28	Balance, end of year	188.0	191.6
29	Mid-Year Accumulated Amortization	183.0	185.8
30	**Mid-Year Contributions**	**514.6**	**627.0**
31	**Net Mid-Year Rate Base**	**1,327.2**	**1,362.1**

The gross rate base reflects significantly higher than forecast levels of developer-funded assets over the 2016 to 2020 period. Developers are responsible for construction of distribution infrastructure in new subdivisions. When these assets are placed into service, ownership of the assets is transferred to EWSI, where the assets, together with offsetting contributions in aid of construction, are added to the rate base.

In 2020, the net mid-year rate base is $34.9 million or 2.6% more than forecast. This increase in rate base is driven by higher than forecast capital expenditures as discussed in section 2.4.1.

2.3.6 Return on Rate Base

In 2020, In-City Water's return on equity was $0.3 million (0.6%) more than forecast and $6.6 million (4.1%) less for 2017-2020. In 2020, this increase was attributable to EWSI's actions to control operating costs combined with a change in accounting treatment resulting in additional capitalization of expenses, which largely offsets a significant decline in revenue.

Table 2.3.6-1
Return on In-City Water Share of Mid-Year Rate Base
($ millions)

	Return on Rate Base	A	B	C	D
		2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Net Mid-Year Rate Base	1,327.2	1,362.1		
2	In-City Water Share - %	78.9%	78.1%		
3	In-City Water Share - $	1,047.6	1,063.3		
4	Deemed Capital Structure				
5	Debt (%)	60.00%	60.00%		
6	Equity (%)	40.00%	40.00%		
7	Cost of Capital				
8	Cost of Debt	4.84%	4.60%	4.87%	4.81%
9	Cost of Equity	10.18%	10.09%	10.18%	9.73%
10	Weighted Average Cost of Capital (WACC)	6.97%	6.80%	6.99%	6.78%
11	Return on Mid-Year Rate Base				
12	Return on Rate Base Financed by Debt	30.4	29.4	114.7	113.5
13	Return on Rate Base Financed by Equity	42.6	42.9	159.7	153.1
14	**Total Return on In-City Water Rate Base**	**73.0**	**72.3**	**274.4**	**266.6**

In-City Water's share of the total system net mid-year rate base is 0.8% less than forecast. This reflects a 1.5% decrease attributable to higher than forecast asset additions for fire protection related assets (hydrants) offset by a 0.7% increase related to the change in In-City Water's demands on water system relative to that of Regional Customers. The In-City Water net mid-year rate base is within 1.5% of the forecast amount.

Return on rate base is calculated separately for the debt-financed and equity-financed portions of In-City Water's net rate base. The rate of return on debt is equal to the embedded cost of debt for EWSI's total water system, as calculated in Table 2.3.6-2 below:

Table 2.3.6-2
Interest Expense and Cost of Debt
($ millions)

	Interest Expense and Cost of Debt	A	B	C	D
		2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Interest expense				
2	Interest on short-term debt	0.9	0.2	3.9	3.9
3	Interest on City of Edmonton debentures	0.4	0.4	2.6	2.6
4	Interest on intercompany debentures	36.5	35.8	136.7	133.9
5	Total interest expense	37.9	36.4	143.1	140.3
6	Mid-year debt and other long-term liabilities				
7	Mid-Year Short-term debt	32.7	10.6		
8	Mid-Year Long-term debt	747.9	777.9		
9	Mid-Year Other Long-term liabilities	1.8	2.3		
10	Total mid-year debt and other long-term liabilities	782.4	790.7		
11	**Embedded Cost of Debt**	**4.84%**	**4.60%**	**4.87%**	**4.81%**

The embedded cost of debt is lower than forecast in 2020. Although, EWSI issued more long term debt than forecast, which is more expensive that short term debt, due to favorable economic conditions EWSI was able to issue the long term debt at lower than forecast rates over the 2017 to 2020 period.

2.3.7 Transactions with Affiliates

In-City Water derives a significant proportion of its revenue and expenses from transactions with affiliates, including the City of Edmonton, EUI and its subsidiaries, and other EWSI business units. Table 2.3.7 provides a summary of In-City Water's 2020 actual and forecast transactions with affiliates.

Table 2.3.7
Transactions with Affiliates
($ millions)

		A	B	C	D
	Affiliate and Service	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	**Revenues from the provision of services to the City of Edmonton**				
2	Public Fire Protection	12.2	12.0	46.2	45.9
3	Water sales	3.4	2.2	13.0	12.4
4	Other	0.2	-	0.9	0.1
5	Total	15.8	14.2	60.2	58.4
6	**Services provided by (recovered from):**				
7	**City of Edmonton**				
8	Franchise Fees	16.3	15.5	62.1	59.3
9	Property Taxes	0.5	0.4	1.8	1.1
10	Interest on City of Edmonton Debentures	0.4	0.4	2.6	2.6
11	Mobile equipment services	2.0	2.3	7.6	9.1
12	Other services	1.4	0.2	5.4	2.3
13	Meter Reading Recoveries	-	-	-	(1.4)
14	Total	20.6	18.9	79.4	72.9
15	**EPCOR Utilities Inc**.				
16	Corporate Shared Service Costs	15.9	12.1	61.8	49.1
17	Interest on Intercompany Debentures	36.5	35.8	136.7	133.9
18	Interest on Short-term debt	0.9	0.2	3.9	3.9
19	Other Services	-	0.6	-	0.9
20	Total	53.4	48.1	202.4	187.8
21	**EPCOR Distribution and Transmission Inc.**				
22	Meter Reading Recoveries	-	-	-	(0.5)
23	Other services	0.1	-	0.5	0.0
24	Total	0.1	-	0.5	(0.5)
25	**EPCOR Technologies Inc.**				
26	Hydrovac Charges and Space Rentals	0.9	1.2	3.6	6.0
27	Other Services (Recoveries)	-	(0.1)	-	(0.2)
28	Total	0.9	1.2	3.6	5.8
29	**EPCOR Energy Alberta LP**				
30	Customer Billing and Collection Services	8.7	9.3	33.0	32.8
31	Meter Data Management	-	0.3	-	0.8
32	Trouble Call Support Services	-	0.6	-	
33	Total	8.7	10.1	33.0	33.6
34	**EPCOR Power Development**				
35	Other Services (Recoveries)	-	(0.2)	-	(0.6)

	Affiliate and Service	A	B	C	D
		2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
36	**EPCOR Commercial Services**				
37	Commercial Services Rent Recoveries	-	-	-	(0.7)
38	**Other EWSI Business Units**				
39	EWSI Shared Services Allocation	10.5	10.3	40.6	38.4
40	Water Sales to Wastewater	(0.4)	(0.4)	(1.5)	(1.7)
41	Meter Reading Recoveries from Wastewater	(2.5)	(2.4)	(9.0)	(9.3)
42	Meter Reading Recoveries from Drainage Services	(2.5)	(2.4)	(9.0)	(7.7)
43	Customer Service Fees from Drainage Services	-	-	-	0.9
44	Other Services provided to Drainage Services	-	(0.3)	-	(0.5)
45	Meter Reading Recoveries from Other EWSI Business Units	-	-	-	(0.1)
46	Quality Assurance Lab Testing and Other Services from Other EWSI Business Units	-	-	-	0.2
47	Drainage Services Rent (Recoveries)	-	(0.2)	-	(0.2)
48	Total	5.2	4.5	21.1	20.0
49	**Expenditures on capital projects arising from services provided by:**				
50	City of Edmonton	3.2	0.5	12.5	3.0
51	EPCOR Technologies Inc.	4.1	5.7	15.7	18.6
52	EPCOR Utilities Inc.	-	2.3	-	5.1
53	EPCOR Drainage Services	-	2.6	-	9.1
54	EPCOR Distribution and Transmission Inc.	0.1	0.2	0.5	1.2
55	Other EPCOR Business Units	-	-	-	0.2
56	Total	7.3	11.3	28.7	37.1

2.4 Capital Programs

2.4.1 Capital Expenditures

Table 2.4.1 compares approved capital expenditures from the PBR forecast to actual capital expenditures for 2020 for each project with approved or forecast capital expenditures in excess of $5.0 million over the 2017-2021 PBR term, as well as for each project category. Table 2.4.1 also provides a comparison of total 2017-2021 approved capital expenditures to EWSI's current capital forecast.

Table 2.4.1
Capital Expenditures
($ millions)

		A	B	C	D	E	F	G	H	I	
		2020			2017-2020			2017-2021			
		PBR Forecast*	Actual	Difference	PBR Forecast*	Actual	Difference	PBR Forecast*	Current Projection	Difference	
1	**Regulatory**										
2	Water Services Replacement/Refurbishment	2.1	4.7	2.6	8.0	10.7	2.7	10.2	15.5	5.3	1
3	Accelerated Lead Service Replacement (NRA)	2.8	2.5	(0.3)	3.6	2.5	(1.1)	5.9	6.0	0.1	
4	Phosphoric Injection for Lead Control (NRA)	-	1.0	1.0	9.8	2.3	(7.5)	9.8	8.7	(1.1)	
5	Projects < $5 Million	0.3	0.1	(0.2)	1.2	1.7	0.5	1.5	2.0	0.5	
6	**Subtotal**	**5.2**	**8.3**	**3.1**	**22.6**	**17.2**	**(5.5)**	**27.4**	**32.2**	**4.8**	
7	**Growth/Customer Requirements**										
8	Network PD Transmission Mains	2.3	1.3	(0.9)	10.4	18.9	8.6	14.4	26.7	12.3	2
9	Distribution System Modifications	1.0	2.2	1.2	5.0	5.8	0.8	6.0	14.4	8.3	3
10	Water Main Cost Sharing Program	0.5	2.0	1.6	2.2	6.2	4.0	3.0	7.6	4.6	4
11	Water Services Connections	5.1	4.6	(0.5)	18.2	21.9	3.7	23.6	27.2	3.7	5
12	New Water Distribution Mains	1.8	1.6	(0.2)	7.0	8.5	1.5	8.8	10.8	1.9	
13	LRT Relocates (NRA)	6.0	8.5	2.5	18.9	21.9	3.0	24.9	25.6	0.7	
14	Discovery Park Reservoir & CRSWSC Pipe Line (NRA)	0.4	9.2	8.8	9.2	9.5	0.3	9.2	9.7	0.4	
15	PD Construction Coordination	3.5	2.6	(1.0)	11.8	10.4	(1.4)	15.4	13.3	(2.1)	
16	New Meter Purchase/Installation	3.0	2.1	(0.9)	10.1	8.9	(1.1)	13.2	11.2	(2.0)	6
17	Projects < $5 Million	0.2	0.0	(0.2)	2.3	6.5	4.1	2.6	8.9	6.3	7
18	**Subtotal**	23.8	34.0	10.2	95.1	118.5	23.4	121.2	155.4	34.1	
19	**Health, Safety & Environment**										
20	Solar Power Systems (including BESS) Project (net)	-	(3.0)	(3.0)	-	1.4	1.4	-	26.0	26.0	8
21	E.L. Smith - Deep Bed Filtration	10.3	0.0	(10.3)	11.6	0.4	(11.3)	22.3	0.4	(22.0)	9
22	Projects < $5 Million	0.8	0.7	(0.1)	3.1	3.0	(0.1)	4.3	3.3	(1.0)	
23	**Subtotal**	**11.1**	**(2.3)**	**(13.4)**	**14.7**	**4.7**	**(10.0)**	**26.6**	**29.6**	**3.0**	
24	**Reliability & Life Cycle Improvements**										
25	Obsolete Valve Replacement Program	0.8	4.4	3.5	3.3	9.1	5.8	4.1	13.4	9.3	10
26	Structural Rehab Program - E.L. Smith	0.5	1.6	1.1	1.5	3.1	1.5	2.0	10.1	8.1	9
27	Obsolete Hydrants Replacement Program	0.9	2.6	1.7	3.5	7.8	4.3	4.4	10.4	6.0	11
28	Chemfeed Upgrades – E.L Smith	0.5	2.5	2.0	3.6	6.8	3.2	4.0	8.9	4.9	12
29	Chemfeed Upgrades - Rossdale	0.5	1.8	1.4	3.3	7.8	4.5	4.0	8.4	4.4	13
30	Rossdale Filter Underdrain Upgrades	1.2	0.1	(1.2)	4.7	8.1	3.4	4.7	8.1	3.4	14
31	E.L. Smith - Bypass (Ring) Main	5.2	5.6	0.4	7.0	6.2	(0.8)	7.0	10.4	3.4	15
32	HVAC Upgrades – E.L Smith	0.6	0.0	(0.6)	2.8	4.9	2.1	3.4	5.0	1.6	
33	Mechanical Upgrades – E.L Smith	0.7	1.1	0.4	4.1	5.8	1.7	4.9	6.4	1.5	
34	Network Valve Chamber Refurbishment	1.1	2.1	1.0	4.4	5.7	1.3	5.6	7.0	1.4	
35	Rossdale Clarifier C1-2 Upgrade	-	-	-	4.3	5.5	1.1	4.3	5.5	1.1	
36	Vehicle & Fleet Additions	2.2	3.7	1.6	10.1	9.6	(0.5)	11.8	12.1	0.3	

		A	B	C	D	E	F	G	H	I	
		2020			2017-2020			2017-2021			
		PBR Forecast*	Actual	Difference	PBR Forecast*	Actual	Difference	PBR Forecast*	Current Projection	Difference	
37	Water Meter Change Out Program	6.9	2.0	(4.9)	19.0	10.9	(8.1)	25.6	12.8	(12.8)	16
38	Water Main Proactive Renewal	3.7	3.8	0.1	14.2	15.0	0.8	18.0	15.1	(2.9)	17
39	Electrical Upgrades - Reservoirs	0.8	0.2	(0.6)	4.1	2.4	(1.7)	5.3	2.6	(2.7)	18
40	Water Main Reactive Renewal	12.2	11.4	(0.8)	41.1	45.9	4.8	54.7	52.0	(2.6)	19
41	Transmission Mains Replacement/Refurbish	2.8	1.9	(0.8)	10.4	10.5	0.1	13.3	11.7	(1.6)	
42	Cell/Pumphouse Roof Replacement	-	0.1	0.1	4.9	1.6	(3.3)	6.3	5.0	(1.3)	
43	SCADA System Upgrade Program	0.7	0.9	0.1	5.0	3.7	(1.3)	5.7	4.6	(1.1)	
44	Electrical Upgrades - Rossdale	1.2	0.4	(0.8)	3.7	3.6	(0.2)	5.2	4.3	(0.9)	
45	Projects < $5 Million	13.9	11.0	(2.9)	56.6	57.4	0.9	68.0	75.3	7.3	20
46	**Subtotal**	**56.3**	**57.1**	**0.9**	**211.6**	**231.2**	**19.5**	**262.4**	**289.0**	**26.6**	
47	**Performance Efficiency & Improvement**										
48	Water D&T Facility Expansion	-	12.7	12.7	16.0	12.7	(3.3)	16.0	22.5	6.5	21
49	Water Main Cathodic Protection	4.3	4.6	0.3	16.6	14.6	(2.1)	21.0	18.1	(2.9)	22
50	Projects < $5 Million	0.7	2.8	2.1	6.8	5.9	(1.0)	7.1	6.4	(0.7)	
51	**Subtotal**	**5.0**	**20.1**	**15.1**	**39.4**	**33.1**	**(6.3)**	**44.1**	**47.0**	**2.8**	
52	**Accelerated**										
53	Accelerated Water Main Renewal	10.6	11.2	0.6	41.0	41.7	0.7	51.9	41.4	(10.5)	23
54	Accelerated Fire Protection	3.9	1.1	(2.7)	13.3	8.6	(4.7)	15.9	9.8	(6.1)	24
55	**Subtotal**	**14.5**	**12.4**	**(2.1)**	**54.4**	**50.4**	**(4.0)**	**67.8**	**51.2**	**(16.6)**	
56	**Capital Expenditures before contributions**										
57	**Contributions**										
58	Water Services Connections	(5.1)	(2.7)	2.3	(18.2)	(13.6)	4.6	(23.6)	(17.2)	6.4	5
59	Private Development Contributions	(0.5)	(0.1)	0.3	(1.5)	(0.9)	0.5	(1.9)	(1.2)	0.7	
60	New Water Distribution Mains	(1.8)	(1.0)	0.8	(7.0)	(7.2)	(0.2)	(8.8)	(9.3)	(0.5)	
61	**Subtotal**	**(7.3)**	**(3.9)**	**3.5**	**(26.6)**	**(21.7)**	**5.0**	**(34.3)**	**(27.7)**	**6.6**	
62	**Capital Expenditures**	**108.5**	**125.8**	**17.3**	**411.2**	**433.3**	**22.1**	**515.3**	**576.6**	**61.4**	

* Amounts include capital expenditures approved through Non-Routine adjustments.

Explanations for differences between PBR forecast capital expenditures for 2017 to 2021 and EWSI's current projection in excess of $2.0 million on individual projects with total costs in excess of $5.0 million, as well as for project categories in aggregate include:

1. **Water Services Replacement/Refurbishment** – $5.3 million (52%) greater than forecast. This program includes relocation of water service lines that do not meet current servicing standards, reactive replacements of service box and components, and customer-initiated lead service replacements (EPCOR portion of water service lines only). The increased expenditure in the 2017-2021 PBR term is primarily due to a high than expected number services qualifying for replacements combined with the increased capitalization of replacement costs that were previously expensed.
2. **Network PD Transmission Mains** – $12.3 million (85%) greater than forecast. This program represents the reimbursement of the costs incurred by private developers to extend the transmission network (450 mm and larger in diameter) to new subdivisions. Since developers determine both the timing of projects and the areas to be developed, expenditures on this program have proven difficult to forecast. Significant additions to this program include transmission main projects for Ellerslie Road Arterial Twinning Project, 28th Avenue SW/Whitemud Creek Crossing, the Horse Hills Creek/Meridian Street Crossing, 199th Street from 23rd Avenue to 35th Avenue, and Aurum Road 9th Street to 17th Street.
3. **Distribution System Modifications** – $8.3 million (139%) greater than forecast. This program includes relocating or modifying existing water mains and appurtenances to eliminate conflicts arising from COE projects, primarily related to road or sidewalk widening. The increase in program expenditures primarily relates to the combination of the COE's Yellowhead Trail Freeway Conversion project ($4.5 million), the 50th Street Overpass project ($1.8 million), and a large number of additional neighborhood renewals and transportation projects, which were unforeseen in prior years.
4. **Water Main Cost Sharing**– $4.6 million (151%) greater than forecast. This program provides private developers with a partial rebate for the construction of water mains 300 to 400 mm in diameter. Similar to Network PD Transmission Mains, the costs of this program are driven by developer activity. The increase in the costs of this program result from higher than forecast developer activity during the PBR term.
5. **Water Services Connections (net of contributions)** – $10.0 million (100%) greater than forecast. This program provides for the construction of new water services for infill developments and redevelopments. Contributions from private developers were forecast to recover 100% of the construction costs for new water service connections. EWSI found that after accounting for all program costs, its service application rates provide for recovery of less than 75% of the total program costs. Currently, EWSI's costs for completing service connections are recovered through a fee schedule outside the Bylaw and does not reflect EWSI's full cost for these activities. In the 2022-2026 PBR Application EWSI has updated the charge to a cost of service basis for each service connection, which will ensure EWSI achieves 100% recovery in the 2022-2026 PBR term.
6. **New Meter Purchase/Installation** – $2.0 million (15%) less than forecast. The purpose of this program is to comply with the Bylaw, which requires that all water consumed by customers must be metered. The decreased program costs relate primarily to lower activity during the COVID-19 pandemic period, during which home visits have been minimized.
7. **Growth and Customer Requirements < $5.0 million** – $6.3 million (247%) greater than forecast. The projected increase in this category results primarily from the unbudgeted Laurel Booster Station

project needed to address development in a high elevation area ($1.7 million), additional costs to acquire water mains from the Capital Region Northeast Water Service Commission following city expansion ($2.7 million), unbudgeted capital expenditures related to the acquisition of land necessary to construct a future reservoir to supply future water customers between 41 Avenue Southwest and the Edmonton International Airport ($1.6 million), which are partially offset by capital expenditure reductions in other growth projects.

8. **E.L. Smith Solar Farm and Battery Storage (net of contributions)** – $26.0 million (new projects). As noted in Section 2.3.2, instead of purchasing locally produced renewable power at an annual cost of $1.9 million, EWSI plans to construct a solar farm at E.L. Smith. The solar farm is expected to include a battery energy storage system that would be almost entirely grant-funded. The solar farm will include approximately 45,000 solar panels located on 51 acres of land to the southwest of the water treatment plant, and is expected to generate 21,500 MWh of renewable electricity in its first year of operations.
9. **Deep Bed Filtration Conversion – E.L Smith** – $22.0 million (99%) less than forecast and **Structural Rehabilitation Program – E.L Smith** – $8.1 million (400%) greater than forecast. During engineering inspections in 2018, EWSI identified immediate needs for structural rehabilitation of the E.L. Smith Stage 1 and Stage 2 filter plenums (12 filters in total). Accordingly, the conversion to deep bed has been postponed to the 2032-2036 PBR term so that the required structural rehabilitation and upgrades can be completed first.
10. **Obsolete Valve Replacement Program** – $9.3 million (225%) greater than forecast. Higher than expected rates of deterioration, requiring adjustments to valve replacement schedules, combined with the increased capitalization of replacement costs that were previously expensed are attributable for the increase in project costs. Although the projected cost of this program has increased substantially, improving overall valve operability in the system reduces isolation time, lessens the potential for property damage and mitigates customer impacts during emergency main break response.
11. **Obsolete Hydrant Replacement Program** – $6.0 million (136%) greater than forecast. Similar to the obsolete valve replacement program, higher than expected rates of deterioration have led to increased backlog, requiring adjustments to hydrant replacement schedules. EWSI has adjusted its hydrant replacement schedule to clear backlogs and ensure fire protection service levels are maintained.
12. **Chemfeed Upgrades – E.L Smith** – $4.9 million (122%) greater than forecast. Higher than estimated costs for a significant fluoride room upgrade to replace end-of-life equipment, and unanticipated upgrades to the sodium hypochlorite room, including new generation cells, are the primary factors contributing to the increase in the costs of this program.
13. **Chemfeed Upgrades – Rossdale** – $4.4 million (109%) greater than forecast. EWSI identified significant health, safety and environmental needs, requiring extensive upgrades to the sodium bisulphite room, which accounts for the majority of the program overage during the current PBR term.
14. **Filter Underdrain Upgrades – Rossdale** – $3.4 million (72%) greater than forecast. Both the scope and cost of this project have increased following an inspection of the filter underdrain system that identified unforeseen needs for upgrades to air scour systems, combined with an unexpected increase in the price of steel.

15. **Bypass Main (Ring Main) – E.L Smith** – $3.4 million (48%) greater than forecast. The scope of this project includes the construction of a new bypass primary feeder to help ensure redundancy and uninterrupted service to North and West Edmonton. In 2019, a historical resource impact assessment confirmed the presence of cultural materials within the proposed construction area, requiring archaeological mitigation, and increasing total project costs. Further design also identified the requirement for additional manual isolation valves to improve operational flexibility and isolation redundancy.
16. **Water Meter Change out Program** – $12.8 million (50%) less than forecast. The decrease in the projected cost of this program results from an improvement in the expected lives of the batteries used in the meters. As a result, fewer meters are expected to require replacement during the current PBR term.
17. **Water Main Proactive Renewal** – $2.9 million (16%) less than forecast. This project is very closely tied to Reactive Renewal and includes replacements or upgrades of water mains in older areas where water mains do not conform to current design standards for water quality, fire protection, and system reliability.
18. **Electrical Upgrades Program – Reservoirs** – $2.6 million (49%) less than forecast due to the deferral of lower priority electrical upgrades to a future PBR terms.
19. **Water Main Reactive Renewal** – $2.6 million (5%) less than forecast. Actual-to-forecast variances for this program generally correlate with the number of main breaks occurring, which is dependent upon weather conditions. Although the unit cost of construction for water main replacements has increased due to changes in the City's road restoration standards, increased traffic accommodation requirements, and an increase in transmission mains that qualify for replacement, the ongoing decrease in cast iron water main breaks has resulted in a decrease in the total length of candidates to be replaced, which more than offsets the increase in renewal costs per linear foot.
20. **Reliability and Life Cycle Improvements < $5.0 million** – $7.3 million (11%) greater than forecast. The projected increase in this category result primarily from the combination of the increased scope of the Rossdale stilling basin upgrade project ($3.0 million); accelerated roof and structural upgrades to Rossdale Reservoir Cell #1 ($4.2 million), and unbudgeted CRNWSC and NW transmission main inspection costs ($3.7 million). These increases were offset by the deferral of lower priority Rossdale roof replacements ($2.0 million), E. L. Smith electrical upgrades ($2.5 million) and a significant portion of the E.L. Smith High Level Pump #5 upgrades to the next PBR term ($3.7 million). The remaining increase was related mainly to other annual water treatment plant programs required to rehabilitate or replace on a life-cycle basis. Within each of these programs, the most critical work was prioritized for completion within the current PBR term and deferrable projects were rescheduled for future terms.
21. **Water D&T Facility Expansion** – $6.5 million (41%) greater than forecast. Completion of the D&T Facility was originally planned for 2017. This project has been re-scoped following the transfer of Drainage to EPCOR and the completion of an EPCOR-wide real estate review. The review concluded that a consolidated solution for Water and Drainage would provide long-term synergies and operational efficiencies that would outweigh the additional capital costs. In August 2020, EWSI finalized the purchase of a developed property on Aurum Road in North East Edmonton, which is ideally suited to EWSI long term needs. Site renovations will be required before large scale moves can occur in late 2021 and are included within the projected capital expenditure overage for this

project. The costs for the project have been allocated 40% to Water Services and 60% to Drainage Services based on estimated headcount.

22. **Water Main Cathodic Protection** – $2.9 million (14%) less than forecast. The reduction in the costs of the program result from adoption of more efficient anode installation processes combined with delays attributable to the ongoing COVID-19 pandemic.

23. **Accelerated Water Main Renewal** – $10.5 million (20%) less than forecast. The expenditures within this program are largely dependent upon the City paving program plans and the water main break frequency. The reduction in the forecasted program is primarily due to the reprioritization of other more critical lifecycle and reliability programs.

24. **Accelerated Fire Protection** – $6.1 million (38%) less than forecast. EWSI expects that expenditures over the remainder of the 2017-2021 PBR term will be less than approved amounts, due to a smaller number of potential sub-projects meeting the Accelerated Fire Protection Program criteria. EWSI has allocated a portion of the additional funding towards the Infill funding program that was introduced in 2019. This is a trail program that offsets the costs of infrastructure upgrades in infill areas and was developed in conjunction with IDEA and the COE. Additionally, funding has also been directed to critical work which has been identified in areas such as Distribution System Modifications (for City-driven relocates) and Transmission Main inspection work where capital expenditures are expected to exceed levels in the PBR forecast.

2.4.2 Construction Work in Progress

In-City Water's rate base consists of plant in service. If a capital project is not completed (i.e. not placed into service) in the year, the capital expenditures on that project remain in Construction Work in Progress and are excluded from the rate base. In 2020, as shown on Table 2.4.2, the balance in Construction Work in Progress was $15.4 million greater than forecast, of which $6.7 million relates to the new Water D&T and Drainage shared facility, and $6.2 million for the E.L. Smith Bypass Main project.

Table 2.4.2
Construction Work in Progress
($ millions)

		A	B	C	D
Construction Work in Progress		**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	Balance, beginning of period	4.7	20.7	0.3	3.8
2	Capital Expenditures	101.5	125.8	377.8	433.2
3	Capital Additions	(94.4)	(119.2)	(366.3)	(409.8)
4	**Balance, end of period**	**11.8**	**27.2**	**11.8**	**27.2**

The PBR plan allows EWSI to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an allowance for funds utilized during construction (AFUDC). In 2020, AFUDC included in capital expenditures on eligible projects amounted to $1.4 million, compared to the PBR forecast amount of $0.7 million.

2.5 Operational Performance

2.5.1 Water Quality Index

The Water Quality index is calculated as the percentage of water quality test results that meet EWSI's internal water standards. Water quality standards are established by both the federal and provincial governments and are incorporated into EWSI's Approval to Operate from Alberta Environment and Parks (AEP). In some cases, EWSI sets even stricter limits for critical parameters that are identified in EWSI Quality Standards, to provide early warnings of potential water quality problems; so that corrective actions can be taken before external standards are not met.

Table 2.5.1
Water Quality Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Quality Index	The percentage of the total number of water quality tests taken in the period that do not yield suspect results	> 99.7%	99.8%	1.001
			Average Index	1.001
			Index Standard Points	25.0
			Total Actual Points	25.0
			Maximum Available Points Including Bonus Points	25.5
			Total Points Earned	**25.0**

2020 Highlights

- **Water Quality Index:** EWSI met all Health Canada Drinking Water Quality Guidelines and Alberta Environment and Parks' water quality testing requirements in 2020. During the year, EWSI collected 59,271 samples of treated drinking water, of those samples only 147 (0.25%) did not meet EWSI internal water quality standards.

  The majority of variances from EWSI internal water quality standards in 2020 were related to temporary increases in turbidity and/or decreases in chlorine concentrations in samples collected from the distribution system. Customer water quality inquiries were also related to increased turbidity and/or decreased chlorine.

2021 Areas for Improvement

- **Water Quality Index:** Increases in turbidity and/or decreases in chlorine concentrations, can be partly explained by changing water consumption patterns resulting from the COVID-19 pandemic. In response to changing consumption patterns EWSI developed a communication strategy to encourage large facility owners to flush their building's plumbing system when experiencing low occupancy. Additionally, EWSI conducted an analysis of the distribution system looking for areas of low consumption (increased stagnation) where increases in turbidity and/or decreases in chlorine concentrations were more likely to occur. Based on this distribution system assessment, additional flushing activities were completed in areas where potential stagnation was identified. Both of these programs will also continue in 2021.

2.5.2 Customer Service Index

The customer service index is a composite measure of the customers' perception of satisfaction with EWSI service, the aesthetic quality of water and speed of response to customer issues.

Table 2.5.2
Customer Service Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Post Service Audit Factor	The percentage of the customers responding as "completely" or "very satisfied" in the level of service received from the EWSI Emergency group.	> 74.9%	74.2%	0.990
Home Sniffing Factor	The percentage result of customer satisfaction for the home sniffing survey.	> 94.4%	95.1%	1.008
Response Time Factor	The average number of minutes needed to confirm a water main break from the time a call is received at EWSI's dispatch office.	< 25	17.8	1.290
Planned Construction Impact Factor	The percentage of the total planned construction events where EWSI complies with required construction notification procedures.	> 95.8%	97.3%	1.015
			Average Index	1.076
			Index Standard Points	20.0
			Total Actual Points	21.5
			Maximum Available Points Including Bonus Points	23.0
			Total Points Earned	**21.5**

2020 Highlights

- **Post Service Audit (PSA) Factor**: In 2020, EWSI continued to focus on enhancing the customer experience and continued to see improvement to the PSA compared to prior years. Water worked with Drainage Services and EPCOR Distribution & Transmission to establish common call handling processes for utility related emergencies.
- **Home Sniffing Factor**: The Home Sniffing program is designed to measure the impact of spring run-off in the river and the effectiveness of water treatment during this period, particularly in terms of mitigating run-off related odours at the tap. Spring runoff started in mid-April and its intensity and duration posed some of the greatest challenges the Edmonton water treatment plants have experienced in recent years. Despite these challenges, production was maintained, and taste and odour concerns were managed effectively. Through information collected from 300 home sniffers, data trends were analyzed which provided useful feedback for plant operators during spring runoff.

  Following the three-month customer home sniffing monitoring period, the 2020 customer satisfaction factor was 95.1%, which exceeded the target of 94.4%.
- **Response Time Factor:** EWSI continued to exceed the Response Time Factor through efficient dispatching of crews. Crews are typically assigned to a quadrant and stay within that quadrant allowing efficient dispatching to main breaks.

- **Planned Construction Impact Factor:** A number of newly hired inspectors and coordinators were trained in 2020 on the steps required to meet targets for the Planned Construction Impact Factor. This included formal workshops and informal training sessions through job shadowing. Additional improvements included development of further refined construction coordination plans and enhancements to IT infrastructure for field resources to improve field-to-office communication and give better visibility on construction timelines.

2021 Areas for Improvement

- **Post Service Audit (PSA) Factor**: In 2021, EWSI will continue to focus growing the customer service culture through first call resolution, procedure reviews, and continuing to build customer service skills.
- **Home Sniffing Factor**: A major improvement in 2020 was having next-day home sniffing results available daily, including weekends. This increased response frequency will continue in 2021.

  In 2021, extra emphasis will be placed on home sniffing recruitment to ensure that the home sniffers' distribution represents all areas of the City. Further, measures are required to reduce multiple entries and to encourage home sniffers to submit their results on the day the sniff test is completed, and EWSI will be encouraging participants to stay involved throughout the full monitoring period.
- **Planned Construction Impact Factor:** In 202,1 there will be an increased focus on managing construction projects that are completed with internal Water D&T crews. Additionally, customer notification letters will be revised to include more useful information for customers, and level 3 process maps for all construction coordination activities will be developed to help firm up existing processes that are used to complete these construction projects.

2.5.3 System Reliability and Optimization Index

The System Reliability Index is a measure of the confidence that customers can place in the reliability of the waterworks system.

Table 2.5.3
System Reliability and Optimization Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Main Break Factor	The number of water main breaks that occurred in the reporting period.	< 419	201	1.520
Water Main Break Repair Duration Factor	The percentage of water main breaks repaired and confirmed by EWSI within 24 hours from the time that the flow of water is shut off, excluding main breaks on arterial or collector roads.	> 93.7%	98.2%	1.048
Water Loss Factor	The Infrastructure Leakage Index, a performance indicator quantifying how well a water distribution system is managed for the control of "real" water losses (i.e. leakage).	< 2.0	0.84	1.580

Index Component	PBR Performance Measure	Standard	Actual Score	Index
System Energy Efficiency Factor	The energy used at all water facilities in kWh divided by the average annual water production per residential customer account (ML/kWh/customer).	< 309	249	1.243
			Average index	1.348
			Index Standard Points	25.0
			Total Actual Points	33.7
			Maximum Available Points Including Bonus Points	28.5
			Total Points Earned	**28.5**

2020 Highlights

- **Water Main Break Factor:** EWSI experienced 201 water main breaks in 2020. This is 218 less than the PBR standard of 419. This result is attributable to fewer breaks during winter months as well as the effectiveness of past and on-going water main replacement programs.
- **Water Main Break Repair Duration Factor:** In 2020, 98.2% of main breaks were repaired within 24 hours. This exceeded the PBR standard of 93.7%. When water main break repairs approach 20 hours in duration EWSI provides additional communication to affected customers, and when required, provides temporary water supply support via water tanks, hose hook ups, or delivery of water jugs to affected customers.
- **Water Loss Factor (ILI):** In 2020, EWSI's Infrastructure Leak Index (ILI) of 0.84 exceeded the PBR standard.
- **System Energy Efficiency Factor:** The water distribution system energy efficiency performance decreased slightly in 2020, relative to 2019, due to the impact of the COVID-19 pandemic. The shift in both consumption and primary pressure zones from commercial and industrial areas to residential areas resulted in increased power consumption.

  Despite the decrease in performance, EWSI implemented several energy efficiency improvements and GHG reductions, including:

  - Completion of several building envelope energy efficiency enhancement projects; and
  - Implementation of reservoir temperature control during non-occupied periods resulted in an 11% reduction in gas consumption (with heating and cooling degree days taken into account).

2021 Areas for Improvement

- **Water Loss Factor (ILI):** EWSI will continue to explore continuous improvement options to quantify and validate inputs and to identify and minimize water loss opportunities.
- **System Energy Efficiency Factor:** In 2021, EWSI has several key energy efficiency initiatives planned which will include:
  - Update the Water Canada Climate Change Adaptation Plan;
  - Continue with implementation of the office and reservoir off-hour temperature control program; and

- Continue to improve the building envelope energy efficiency programs to reduce GHG emissions.

2.5.4 Environment Index

The environmental index measures the success of programs and policies designed to mitigate and report adverse environmental impacts.

Table 2.5.4
Environmental Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Conservation Factor	The actual 10 year rolling average monthly Edmonton residential consumption per household.	<17.2	15.1	1.139
Environment Incident Factor	The number of reportable and preventable environmental incidents.	<6	6	1.000
Solids Residual Management Factor	The average number of days that the Rossdale and E.L. Smith water treatment plants are operating in direct filtration mode.	> 120	167.8	1.398
			Average index	1.179
			Index Standard Points	15.0
			Total Actual Points	17.7
			Maximum Available Points Including Bonus Points	16.5
			Total Points Earned	**16.5**

2020 Highlights

- **Water Conservation Factor:** As a result of people spending more time at home during the COVID-19 pandemic residential consumption per customer increased in 2020. Higher indoor residential consumption was partially offset by a reduction in seasonal consumption, as a result of higher than usual precipitation over the summer months. Despite the COVID-19 pandemic, the actual Water Conservation Factor was still well below the standard. This is attributable to historical and ongoing changes in water usage habits and technology improvements resulting in efficient appliances and toilets.
- **Environment Incident Management Factor:** There were a total of six reportable and preventable incidents in 2020. Several of the incidents were lab-based which correlated to sampling errors.

  Root causes were identified for each incident, many pertained to management system issues such as inadequate communication or procedures. Subsequently, corrective actions were identified, assigned, and completed in a timely manner.
- **Solids Residual Management Factor:** In 2020, the water treatment plants successfully operated in direct filtration despite more challenging raw water conditions (e.g. higher colour) than have been experienced in the past. Both water treatment plants operated an average of 168 days in direct filtration relative to the target of 120 days. As a result, total solids discharged to the North Saskatchewan River during the winter months (January, February, November and December) were reduced by 43.3% relative to baseline conventional treatment and total solids reduction was 5.6% for the year.

2021 Areas for Improvement

- **Water Conservation Factor:** The impacts of COVID-19 pandemic have continued into 2021 with higher than usual residential consumption per customer. The duration of the COVID-19 impacts is uncertain, but changes in consumption patterns are likely to continue into at least the early part of the summer. The past two years have experienced colder and wetter than average summers, a more typical summer could result in a large increase in residential consumption for outdoor purposes such as lawn watering.

  Apart from COVID-19, residential consumption per customer will continue to decline due to changes in technology and water conservation awareness. Renovations in older homes will see inefficient appliances and toilets replaced with more efficient ones and new homes will be built with high efficiency appliances and low flush toilets already in place.

- **Environment Incident Management Factor:** Ongoing focus for 2021 will be on reducing the number of reportable incidents by continuing to perform root causes analysis and timely implementation of corrective actions for significant environmental and public health incidents.

  EWSI will also be implementing new consolidated Health, Safety, and Environment incident reporting and management guideline. This guideline is intended to help address management system issues identified in 2020.

- **Solids Residual Management Factor:** EWSI will continue to optimize chemical dosing and other operating strategies for direct filtration, with the goal being to minimize solids discharged to the North Saskatchewan River.

2.5.5 Safety Index

The safety index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public.

Table 2.5.5
Safety Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Near Miss Reporting Factor	The number of near miss reports entered in the ERS system.	>550	724	1.316
Work Site Inspections and Observations Factor	Number of Work Site Inspections and observations completed per year.	>1,032	3,140	3.043
Lost Time Frequency Factor	The actual lost time frequency rate.	<0.57	0.00	2.000
All Injury Frequency Factor	The actual all injury frequency rate	< 1.54	0.59	2.630
			Average index	2.247
			Index Standard Points	15.0
			Total Actual Points	33.7
			Maximum Available Points Including Bonus Points	16.5
			Total Points Earned	**16.5**

2020 Highlights

- **Near Miss Reporting Factor:** Near miss and hazard identification reporting continued to be an effective means to proactively identify hazards and implement corrective actions to mitigate potential harm to employees, contractors and members of the public.
- **Work Site Inspections / Observations Factor:** Work site inspections and observations continued to be a successful leading indicator that provided leadership and employees the opportunity to engage in field activities, proactively identify areas of improvement, and verify conformance to EWSI standards.
- **Lost Time Frequency Rate Factor:** In 2020, EWSI exceeded the lost time frequency rate factor by having no lost time events.
- **All Injury Frequency Rate Factor:** In 2020, EWSI had 3 recordable incidents (Medical Treatment). Two were related to musculoskeletal strains and one was due to an abrasion.

2021 Areas for Improvement

- **Near Miss Reporting Factor:** With consideration of the ongoing impact of the COVID-19 pandemic, there will be a heighted focus on the reporting of near miss and hazard identification events throughout 2021. This ensures employees keep their mind on task and continue with proactive reporting to mitigate hazards before an event occurs.
- **Work Site Inspections / Observations Factor:** With consideration of the ongoing COVID-19 pandemic, EWSI will monitor inspection and observation activities and look for opportunities to continue to conduct proactive field engagements.

- **Lost Time Frequency Rate & All Injury Frequency Rate Factors:** Water Canada has developed risk profiles specific for water treatment plants and water distribution and transmission operations. This will enable EWSI to identify top health and safety risks specific to work environments and implement mitigating factors where possible. The objective will be to ensure effective and meaningful controls are in place to reduce the potential for harm to employees, contractors, and the public.

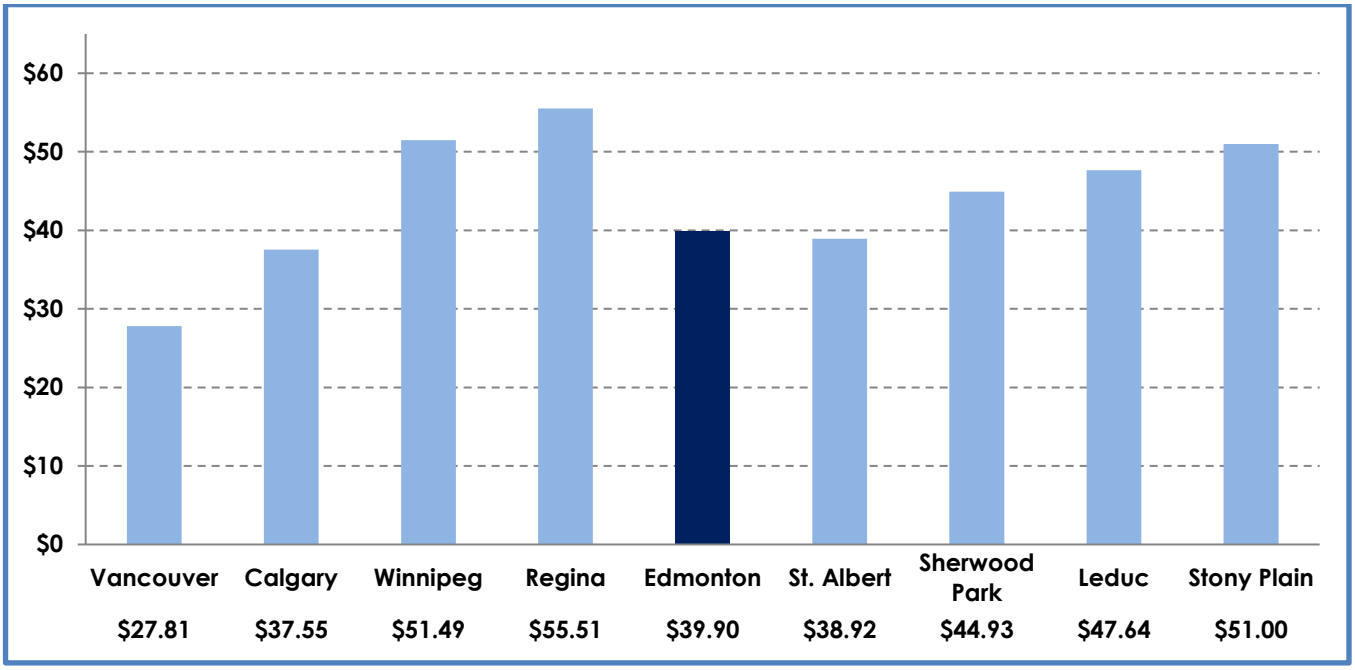
2.6 Rates and Bill Comparisons

Water bill comparisons for 2020 are based on the published water rates for Calgary, Vancouver, Winnipeg and Regina, as well as four local communities. These bill comparisons represent the total cost to the customer and include fixed charges, consumption charges and any other applicable surcharges.

2.6.1 Residential Water Bills

Figure 2.6.1 provides a comparison of residential household water bills for residential household consumption of 14.7 m^3 per month, the average residential customer consumption per month in Edmonton in 2020. Comparison of residential water bills shows that Edmonton's water bills are competitive with all of the cities and local communities surveyed, except for Vancouver. This result is not unexpected. Vancouver has an excellent raw water source and, therefore, has lower needs for water treatment than Edmonton which has a naturally highly variable water source in the North Saskatchewan River.

Figure 2.6.1
2020 Monthly Residential Water Bill Comparison
(14.7 m^3/month)



2.6.2 Commercial Water Bills

Table 2.6.2 provides a comparison of the water bills for commercial customer of various sizes. This table shows that water bills for EWSI's commercial customers are competitive with all of the other surrounding communities and other major cities in western Canada, except for Vancouver.

Table 2.6.2
Commercial Monthly Water Bill Comparison
($ per month)

		A	B	C	D
	Monthly Bill - $ per month	**Small**	**Medium**	**Large**	**Extra Large**
1	**Monthly Consumption** - m^3	**10**	**250**	**1,000**	**5,000**
2	Vancouver	21.63	336.72	1,370	6,703
3	Calgary	43.10	379.98	1,565	7,668
4	Regina	45.90	545.70	2,321	10,940
5	Winnipeg	42.73	497.97	1,976	9,572
6	**Edmonton**	**28.18**	**417.73**	**1,670**	**7,048**
7	St. Albert	30.68	450.68	1,763	8,763
8	Sherwood Park	32.26	677.86	2,695	13,455
9	Stony Plain	34.67	866.78	3,467	17,336
10	Leduc	40.20	668.21	2,772	13,111

3 Wastewater Treatment Services

3.1 Accomplishments and Challenges

In 2020, Wastewater's key accomplishments included:

- Completing an updated Edmonton Wastewater Treatment Integrated Resource Plan (the "IRP") following extensive public engagement from 2017 to 2019. The IRP documents the long term planning process for its wastewater treatment system considering: regulatory changes; technological advancements; changes in volume and characteristics of wastewater and stormwater flows; lifecycle replacement requirements for assets at Gold Bar WWTP and at the Clover Bar Biosolids Recovery Facility; climate change impacts; and EWSI's commitments to stakeholders. EWSI identifies the investments and operational activities that would be required under each of these scenarios, through evaluation of environmental and social impacts, operational, planning and infrastructure responses, risk assessment and management, financial analysis and community impacts. Each project proposed in the IRP is tested against the shared outcomes developed through public engagement processes. In some cases, shared outcomes can drive the pace of implementation of projects.

- Implementing cost controls and efficiency initiatives across all areas of Wastewater's operations, achieving savings in chemical costs from dosing optimization, in contractor costs following the dissolution of the Centre of Excellence, and in engineering costs by reducing the number of engineering studies. EWSI also found opportunities to utilize more internal personnel in certain capital maintenance and repair programs in place of contractors. These adjustments reduced operating expenses by increasing capitalization of internal labour costs and additional capitalized overheads. Finally, as noted above, corporate shared service cost allocations were reduced following the Drainage Services transfer.

- Making significant progress in identifying and rehabilitating deteriorating facilities and improving process performance and reliability at EWSI's wastewater treatment operations. Notwithstanding these successes, many operational and asset management challenges remain such as controlling odours, correcting deteriorating asset condition, and optimizing process performance, stability and reliability. EWSI plans to address these challenges in its capital and operating plans for the upcoming 2022-2024 PBR term.

- Under its One Water Planning approach, initiating the Sanitary Integrated Resource Plan (SanIRP). Under the Sanitary IRP, EWSI will continue to develop strategies to maximize the capture of wet weather flow and diversion to Gold Bar WWTP for enhanced primary treatment and to reduce loadings of bacteria and solids to the North Saskatchewan River. The development of SanIRP will incorporate many synergy opportunities with other EWSI initiatives including SIRP. One of SIRP's initiatives is to promote the wide spread installation of Low Impact Development (LID) features. Installation of LID will reduce stormwater flows to the storm and combined sewer networks, and decrease the combined sewer flow to Gold Bar WWTP and the environment. A city wide performance matrix called Green Hectares has been adopted to track the installation of LID in Edmonton.

3.2 Customers and Consumption

Wastewater's customer counts, consumption and consumption per customer are similar to those of In-City Water. Differences in customer counts, almost entirely within the commercial customer class, are attributable to "water-only" customers who are not tied into the City's drainage system, such as businesses in industrial parks that are served by septic systems, as well as seasonal water customers, such as commercial lawn watering services and golf courses. Table 3.2 below provides a comparison of 2020 and 2017-2020 forecast to actual customer counts and consumption per customer.

Table 3.2
Wastewater Treatment Customers, Consumption and Consumption per Customer

		A	B	C	D
	Customers and Consumption	**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	Customers				
2	Residential	271,073	272,428	263,585	266,445
3	Multi-Residential	3,883	3,779	3,814	3,769
4	Commercial	17,190	17,056	16,862	16,899
5	Total	**292,146**	**293,263**	**284,261**	**287,113**
6	Monthly Consumption per Customer				
7	Residential	13.9	14.7	14.3	14.4
8	Multi-Residential	408.8	407.1	408.8	396.4
9	Commercial	119.0	92.4	121.9	110.2
10	Annual Consumption - ML				
11	Residential	45,329.0	48,202.7	180,671.1	184,052.0
12	Multi-Residential	19,047.7	18,462.5	74,846.2	71,703.4
13	Commercial	24,537.3	18,920.9	98,624.0	89,404.9
14	Total	**88,914.0**	**85,586.0**	**354,141.3**	**345,160.3**

Actual to forecast differences in Wastewater's customer counts and consumption are attributable to the same factors discussed in Section 2.2.

3.3 Financial Performance

Wastewater's revenue requirements are summarized on Table 3.3 below.

Table 3.3
Wastewater Treatment Revenue Requirements
($ millions)

		A	B	C	D
	Summary of Revenue Requirements	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Wastewater Rate Revenue*	105.6	99.0	383.6	365.7
2	Wastewater Revenue Requirement				
3	Operating expenses	59.6	53.9	226.3	200.5
4	Other revenue	(7.1)	(6.4)	(26.5)	(25.7)
5	Depreciation and amortization	19.0	19.6	66.0	68.1
6	Return on rate base financed by debt	13.4	11.7	47.5	44.2
7	Return on rate base financed by equity	20.6	20.1	73.6	78.6
8	Wastewater Revenue Requirement*	105.6	99.0	386.9	365.7
9	**Return on Rate Base Financed by Equity**	**10.18%**	**10.70%**	**10.18%**	**11.52%**

* In the PBR forecast, rebasing and other special rate adjustments have been smoothed over the PBR term. Therefore, although forecast revenue is equal to the revenue requirement over the 2017-2021 PBR term, in any year within the PBR term, forecast revenue may be greater or less than the revenue requirement

Detailed explanations for forecast to actual variances for each of the elements of the revenue requirement are provided in sections 3.3.1 to 3.3.6.

3.3.1 Revenue

Wastewater's rate revenues include fixed monthly services charges applied on a per connection basis, and consumption charges applied to each cubic metre of consumption. Besides rate revenues, Wastewater also has a relatively small amount of other revenue, about 60% of which relates to overstrength surcharges that are subject to the same rate adjustment mechanism as Wastewater's rate revenue. Table 3.3.1 below provides a comparison of Wastewater's 2020 actual and forecast revenue.

Table 3.3.1
Wastewater Treatment Revenue
($ millions)

		A	B	C	D
	Wastewater Treatment Revenue	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Fixed Monthly Service Charges				
2	Residential	16.9	15.5	60.4	56.6
3	Multi-Residential	0.2	0.2	0.9	0.8
4	Commercial	1.1	1.0	3.9	3.6
5	Fixed Monthly Service Charges	18.3	16.7	65.1	61.0
6	Consumption Charges				
7	Residential	45.2	47.0	164.9	165.0
8	Multi-Residential	19.0	18.0	68.4	64.2
9	Commercial	23.1	17.3	85.2	75.5
10	Consumption Charges	87.3	82.3	318.4	304.7
11	Wastewater Rate Revenue	105.6	99.0	383.6	365.7
12	Other Revenue	7.1	6.4	26.5	25.7
13	**Total Wastewater Treatment Revenue**	**112.6**	**105.4**	**410.1**	**391.4**

Wastewater's revenues were $6.6 million less than forecast in 2020, and $17.9 million less than forecast over the 2017-2020 PBR period. This difference is attributable to three factors:

- Lower than forecast inflation resulted in $2.5 million less revenue in 2020 than forecast ($7.5 million lower than forecast for 2017-2020). Since rate increases are capped at inflation less the efficiency factor ("i-x"), lower than forecast inflation from 2016 to 2020 will continue to impact revenues throughout the remainder of the 2017-2021 PBR term;
- Lower than forecast consumption resulted in a $3.0 million decrease in 2020 ($8.0 million lower than forecast for 2017-2020). As with Water in 2020, commercial consumption was 22.9% lower than the PBR forecast primarily attributable to the COVID-19 pandemic. This is partially offset by higher than forecast residential consumption (6.3%); and
- The Non-Routine Adjustment related to the transfer of Drainage Services to EPCOR (see Section 1.5) has reduced revenues by $1.1 million in 2020 relative to the forecast ($3.0 million lower than forecast for 2017-2020).

3.3.2 Operating Expenses by Function

Wastewater's operating expenses are presented and analyzed on both functional and cost category bases. Actual and forecast operating expenses by function are shown in Table 3.3.2 below:

Table 3.3.2
Wastewater Treatment Operating Expenses by Function
($ millions)

		A	B	C	D
	Function and Sub-function	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Power, Other Utilities and Chemicals				
2	Power and Other Utilities	5.6	5.2	21.6	19.9
3	Chemicals	1.7	1.3	6.5	4.8
4	Power, Other Utilities and Chemicals	7.2	6.5	28.1	24.6
5	Wastewater Treatment				
6	Wastewater Treatment Plant	20.3	18.1	76.6	70.3
7	Operations Support Services	8.5	6.5	32.9	25.7
8	Capitalized Overhead	(2.5)	(2.5)	(9.6)	(11.7)
9	Wastewater Treatment	26.3	22.1	99.9	84.3
10	Billing, Meters and Customer Service				
11	Billing and collections	3.6	3.8	13.5	13.5
12	Meter reading	2.5	2.4	9.6	9.3
13	Regulatory Services	1.0	1.5	4.0	5.3
14	Billing, Meters and Customer Service	7.1	7.8	27.2	28.2
15	EWSI Shared Services				
16	EWSI Shared Services	3.5	3.8	13.7	13.4
17	Incentive and Other Compensation	1.2	1.4	4.6	3.2
18	EWSI Shared Services	4.7	5.3	18.3	16.6
19	Corporate Shared Services	5.2	4.1	20.0	16.0
20	Franchise Fees and Property Taxes				
21	Franchise Fees	7.9	7.7	29.4	28.5
22	Property Taxes	1.2	0.6	3.7	2.3
23	Franchise Fees and Property Taxes	9.2	8.3	33.1	30.9
24	**Total Operating Expenses by Function**	**59.7**	**54.0**	**226.5**	**200.7**

Overall, Wastewater's operating expenses for 2020 were $5.7 million less than forecast ($25.8 million less for 2017-2020). Key factors contributing to this difference include:

- **Power and Other Utilities** – $0.4 million less than forecast in 2020, ($1.7 million lower than forecast for 2017-2020), due to lower than forecast power prices.
- **Chemicals** – $0.4 million lower than forecast in 2020 ($1.7 million lower than forecast for 2017-2020), primarily attributable to two factors. First, the Ostara nutrient removal facility was offline more than expected, resulting in lower chemical usage over the 2017 to 2020 period. Second, process and dosing optimization enabled Wastewater to achieve significant reductions in alum usage over the 2017 to 2020 period. These savings are expected to continue to be realized on an ongoing basis.
- **Wastewater Treatment** – $4.2 million lower than forecast in 2020 ($15.6 million lower than forecast for 2017-2020). The variance is primarily attributable to adjustments to the capital program, where projects with a high component of contractor costs have been replaced by capital maintenance and repair projects completed by Wastewater personnel. These changes have led to capitalization of an additional $0.6 million of internal labour costs that would otherwise have been expensed ($5.8 million for 2017-2020) and additional capitalized overheads of $0.1 million in 2020 ($2.0 million for 2017-2020). Besides these changes, the variance also reflects lower than forecast fringe benefits costs of $0.5 million in 2020 ($2.4 million lower than forecast for 2017-2020) related to lower pension

contributions, and $2.4 million in savings in contractor costs ($3.9 million lower than forecast for 2017-2020) resulting from dissolution of the Centre for Excellence, lower maintenance costs, and the completion of fewer engineering studies in 2020. The remainder of the variance results from numerous small items, none of which are individually significant.

- **EWSI Shared Services** – $0.5 million higher than forecast in 2020 ($1.7 million lower than forecast for 2017-2020). Higher than forecast costs in this category in 2020 reflects a $0.3 million increase in business unit allocations ($0.3 million lower than forecast for 2017-2020) and higher than forecast incentive compensation of $0.2 million ($0.6 million lower than forecast for 2017-2020). The 2017-2020 variance also includes $0.8 million of savings in long term disability premiums, the remainder of the variance results from numerous small items, none of which are individually significant.
- **Corporate Shared Services** – $1.0 million less than forecast in 2020 ($4.0 million less for 2017-2020). These differences reflect both the reduction in corporate cost allocations resulting from the transfer of Drainage from the City of Edmonton to EUI, as well as cost savings in corporate functions. As with In-City Water, the cost reductions arising from the transfer of Drainage Services have been returned to Wastewater customers through a Non-Routine Adjustment to 2018 wastewater rates which continues through to 2021.
- **Franchise Fees and Property Taxes** – $0.9 million less than forecast in 2020 ($2.2 million less for 2017-2020). Lower than forecast revenue resulted in a $0.3 million reduction in franchise fees in 2020 ($0.9 million lower than forecast for 2017-2020). Lower than forecast property taxes relate to the deferral of capital projects, including the Operations Center at Mid-point Entrance project, which had been forecast to increase property taxes starting in 2018.

3.3.3 Operating Expenses by Cost Category

Table 3.3.3 shows operating expenses by cost category for Wastewater Treatment Plant Operations, Billing Meters and Customer Service, and EWSI Shared Services, where cost categories differ from the sub-functions in Section 3.3.2.

Table 3.3.3
Wastewater Treatment Operating Costs by Cost Category
($ millions)

		A	B	C	D
	Cost Category	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Wastewater Treatment Plant Operations				
2	Staff Costs and Employee Benefits	18.2	16.6	70.6	60.1
3	Contractors and Consultants	5.0	2.4	17.2	12.6
4	Materials and Supplies	2.1	1.9	8.1	8.5
5	Other	1.0	1.2	4.0	3.0
6	Wastewater Treatment Plant Operations Expenses	26.3	22.1	99.9	84.3
7	Billing, Meters and Customer Service				
8	CUS Charges	3.6	3.8	13.5	13.5
9	Contractors and Consultants	3.5	3.9	13.7	14.7
10	Billings, Meters and Customer Services Expenses	7.1	7.8	27.2	28.2
11	EWSI Shared Services				

	Cost Category	A 2020 PBR Forecast	B 2020 Actual	C 2017-2020 PBR Forecast	D 2017-2020 Actual
12	EWSI Shared Services Allocation	3.3	3.2	12.7	11.5
13	Staff Costs and Employee Benefits	1.3	1.8	5.1	4.6
14	Other	0.1	0.3	0.5	0.5
15	EWSI Shared Services Expenses	4.7	5.3	18.3	16.6

The information presented in this table supports the explanations of differences between 2020 actual and forecast expenses provided in Section 3.3.2. Accordingly, no additional explanations are considered necessary.

3.3.4 Depreciation and Amortization

Wastewater's depreciation expense and amortization of contributed assets for 2020 are shown in Tables 3.3.4 below:

Table 3.3.4
Wastewater Treatment Depreciation and Amortization
($ millions)

	Depreciation and Amortization	A 2020 PBR Forecast	B 2020 Actual	C 2017-2020 PBR Forecast	D 2017-2020 Actual
1	Gross depreciation expense	19.9	20.6	69.7	72.2
2	Amortization of contributions	(0.9)	(0.9)	(3.7)	(3.7)
3	**Depreciation, net**	**19.0**	**19.6**	**66.0**	**68.5**

Wastewater's 2020 depreciation expense was $0.7 million greater than forecast ($2.1 million greater for 2017-2020), even though plant in service was $63.9 million (9%) less than forecast at December 31, 2020 (Table 3.3.5, line 6. This difference results from adjustments to Wastewater's capital program where asset replacement projects were replaced with capital maintenance and repair projects, which have higher effective depreciation rates than asset replacements. In the PBR forecast, depreciation expense was calculated as if all asset additions related to new assets, rather than repair or to overhauls of existing assets. EWSI expects that the effect of higher than forecast depreciation rates will continue through the remainder of the 2017-2021 PBR term.

3.3.5 Rate Base

Wastewater's 2020 mid-year rate base, shown in Table 3.3.5 below, was $35.4 million less than forecast, reflecting lower than forecast capital additions over the 2016 to 2020 period resulting from project deferrals and other adjustments to the capital program described in Section 3.4.1.

Table 3.3.5
Wastewater Treatment Mid-Year Rate Base
($ millions)

		A	B
		2020	
	Components of Mid-Year Rate Base, net of Contributions	PBR Forecast	Actual
1	Plant in Service		
2	Balance, beginning of year	686.6	631.7
3	Capital additions	59.2	52.4
4	Retirements and adjustments	-	(2.1)
5	Balance, end of year	745.8	681.9
6	Mid-Year Plant in service	716.2	656.8
7	Accumulated Depreciation		
8	Balance, beginning of year	186.1	163.0
9	Depreciation expense	19.9	20.6
10	Retirements and adjustments	-	(2.1)
11	Balance, end of year	206.0	181.4
12	Mid-Year Accumulated Depreciation	196.1	172.2
13	Other Rate Base Items		
14	Working Capital	6.6	6.4
15	Materials and Supplies	1.6	1.9
16	**Gross Mid-Year Rate Base**	**528.3**	**492.9**
17	Contributions		
18	Balance, beginning of year	41.0	41.0
19	Contributions in aid of construction	-	-
20	Balance, end of year	41.0	41.0
21	Mid-Year Contributions	41.0	41.0
22	Accumulated Amortization		
23	Balance, beginning of year	18.4	18.4
24	Amortization of contributions	0.9	0.9
25	Balance, end of year	19.3	19.3
26	Mid-Year Accumulated Amortization	18.9	18.9
27	**Mid-Year Contributions**	**22.1**	**22.1**
28	**Mid-Year Rate Base**	**506.2**	**470.8**

Unlike In-City Water, where contributions relate primarily to developer-funded assets, contributions included in Wastewater's rate base offset the cost of non-utility assets included in Wastewater's plant in service. This treatment ensures that the capital costs associated with these assets are not borne by utility rate payers. The cost of operating these assets, as well as any related revenues are also excluded from Wastewater's financial results.

3.3.6 Return on Rate Base

In 2020, Wastewater's return on equity was $0.5 million lower than forecast and $5.0 million greater for 2017-2020. Although, Wastewater achieved a lower than forecast net income, lower than forecast rate base resulted in a Wastewater earning a return on equity of 10.70% in 2020 (11.52% for 2017-2020). EWSI expects that operating cost savings (see section 3.3.2), and lower than forecast rate base will continue to offset any reductions in revenue and drive higher than forecast returns on equity for the remainder of the 2017-2021 PBR term.

Table 3.3.6-1
Wastewater Treatment Return on Rate Base
($ millions)

	Return on Rate Base	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Mid-year Rate Base	506.2	470.8		
2	Deemed Capital Structure				
3	Debt (%)	60.00%	60.00%		
4	Equity (%)	40.00%	40.00%		
5	Cost of Capital				
6	Cost of Debt	4.41%	4.14%	4.37%	4.32%
7	Cost of Equity	10.18%	10.70%	10.18%	11.52%
8	Weighted Average Cost of Capital (WACC)	6.72%	6.76%	6.69%	7.20%
9	Return on Mid-Year Rate Base				
10	Return on Rate Base Financed by Debt	13.4	11.7	47.5	44.2
11	Return on Rate Base Financed by Equity	20.6	20.1	73.6	78.6
12	**Return on Mid-year Rate Base**	**34.0**	**31.8**	**121.1**	**122.8**

Wastewater's weighted average cost of debt calculation are shown in Table 3.3.6-2 below. The lower than forecast embedded cost of debt is a result of both reduced issuances of new long-term debt in response to lower than forecast capital expenditures, and favorable economic conditions which allowed EWSI to issue the long term debt at lower than forecast rates over the 2017 to 2020 period.

Table 3.3.6-2
Wastewater Treatment Interest Expense and Cost of Debt
($ millions)

		A	B	C	D
	Interest Expense and Cost of Debt	2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	Interest Expense				
2	Interest on short-term debt	1.0	0.3	3.7	3.6
3	Interest on City of Edmonton debentures	2.5	-	11.8	6.2
4	Interest on intercompany debentures	10.2	11.6	33.3	35.3
5	Total Interest expense	13.7	12.0	48.8	45.0
6	Mid-year debt and other long-term liabilities				
7	Mid-Year Short-term debt	274.6	272.1		
8	Mid-Year Long-term debt	35.2	16.9		
9	Mid-Year Other Long-term liabilities	0.5	0.3		
10	Total Mid-year debt and other long-term liabilities	310.2	289.4		
11	**Embedded cost of Debt**	**4.41%**	**4.14%**	**4.37%**	**4.31%**

3.3.7 Transactions with Affiliates

Wastewater derives a significant proportion of its revenue and expenses from transactions with affiliates, including the City of Edmonton, EUI, and its subsidiaries, and other EPCOR Water Services Inc. business units. Table 3.3.7 summarizes Wastewater's transactions with affiliates.

Table 3.3.7
Wastewater Treatment Transactions with Affiliates
($ millions)

	Affiliate and Service	A	B	C	D
		2020		2017-2020	
		PBR Forecast	Actual	PBR Forecast	Actual
1	**Revenues from the provision of services to the City of Edmonton**				
2	Wastewater Treatment Services	1.1	0.9	4.1	4.5
3	Other Services	0.2	-	0.9	0.3
4	Total	1.3	0.9	5.1	4.8
5	**Services provided by (recovered from):**				
6	**City of Edmonton**				
7	Franchise Fees	7.9	7.7	29.4	28.5
8	Property Taxes	1.2	0.6	3.7	2.3
9	Interest on Long Term Debt	2.5	-	11.8	6.2
10	Regulatory Services	1.0	-	4.0	0.7
11	Biosolids Contractor Service	-	0.5	-	5.1
12	Other Services	0.2	0.2	0.7	0.8
13	Total	12.9	9.0	49.6	43.6
14	**EPCOR Utilities Inc.**				
15	Corporate Shared Service Costs	5.2	4.1	20.0	16.0
16	Interest on Intercompany Loans	10.2	11.6	33.3	35.3
17	Interest on Short-term debt	1.0	0.3	3.7	3.6
18	Other Services	-	0.2	-	0.3
19	Total	16.3	16.3	57.0	54.9
20	**EPCOR Distribution and Transmission Inc.**				
21	Maintenance and other services	0.1	-	0.2	0.2
22	**EPCOR Technologies Inc.**				
23	Hydrovac Charges	-	-	-	0.3
24	**EPCOR Energy Alberta LP**				
25	Billing and Collection Services	3.2	3.1	12.2	11.7
26	**Other EWSI Business Units**				
27	EWSI Shared Services Allocation	3.3	3.2	12.7	11.5
28	Meter reading services from In-City Water	2.5	2.4	9.6	9.3
29	Water purchases from In-City Water	0.4	0.4	1.5	1.7
30	Regulatory services from Drainage Services	3.2	1.5	12.2	4.7
31	Project engineering recoveries from Drainage	-	-	-	(1.2)
32	Laboratory services recoveries from Drainage	-	(0.3)	-	(1.1)
33	Total	9.4	7.2	36.0	25.0
34	**Expenditures on capital projects arising from services provided by:**				
35	City of Edmonton	-	0.1	-	0.1
36	EPCOR Technologies Inc.	-	0.1	-	0.3
37	EPCOR Utilities Inc.	-	0.0	-	0.3
38	Total	-	0.2	-	0.7

3.4 Capital Programs

3.4.1 Capital Expenditures

Table 3.4.1 compares approved capital expenditures from the PBR forecast to actual capital expenditures for 2020 for each project with approved capital expenditures in excess of $5.0 million over the 2017-2021 PBR term, as well as for each project category. Table 3.4.1 also provides a comparison of total 2017-2021 approved capital expenditures to EWSI's current capital forecast.

Table 3.4.1
Wastewater Treatment Capital Expenditures
($ millions)

		A	B	C	A	B	C	D	E	F	
		2020			2017 to 2020			2017 to 2021			
		PBR Forecast	Actual	Difference	PBR Forecast	Actual	Difference	PBR Forecast	Current Projection	Difference	
1	**Reliability and Life Cycle Improvements**										
2	Build Pipe Racks	-	7.3	7.3	-	9.4	9.4	-	10.8	10.8	1
3	Replace 2.5km of Sludge Line	-	0.7	0.7	-	7.8	7.8	-	7.8	7.8	2
4	Clarifier Chain Replacement	0.6	0.9	0.2	3.4	8.0	4.6	4.1	9.4	5.3	3
5	Sludge Line Upgrades	-	0.1	0.1	3.4	8.0	4.7	3.4	8.0	4.7	4
6	Mechanical Rehab Program	2.7	2.9	0.3	13.9	18.2	4.2	15.6	20.1	4.5	5
7	Structural Rehab Secondaries 1-8	3.5	4.3	0.8	13.9	17.8	3.8	17.6	21.4	3.8	6
8	Structural Rehab Program	1.6	1.4	(0.2)	6.1	7.0	1.0	7.7	11.5	3.8	7
9	Digester 3 Upgrades	-	2.7	2.7	11.3	14.1	2.8	11.3	14.4	3.1	8
10	Distribution Chamber Reconstruction	-	0.0	0.0	3.8	6.8	3.0	3.8	6.8	3.0	9
11	Electrical Rehab Program	1.7	1.7	0.1	5.4	6.8	1.4	7.2	8.9	1.8	
12	Operations Center at Mid-Point Entrance	2.0	0.4	(1.6)	19.4	1.5	(17.9)	19.4	7.5	(11.9)	10
13	Digester 4 Upgrades	6.6	0.1	(6.5)	12.0	1.4	(10.6)	12.0	1.4	(10.6)	11
14	Headworks and Primary Aeration System Upgrades	-	0.1	0.1	6.7	1.4	(5.3)	6.7	1.4	(5.3)	12
15	Utility Hot Water System Rehabilitation	1.0	2.1	1.1	12.9	8.8	(4.0)	13.9	9.0	(4.9)	13
16	Buildings and Site Rehab	1.2	1.7	0.5	11.6	5.7	(5.8)	12.8	8.0	(4.7)	14
17	Square 1 Gas Room Replacement	11.0	0.8	(10.1)	12.0	1.3	(10.7)	15.6	10.9	(4.7)	15
18	Site Ventilation Rehabilitation	9.0	4.2	(4.7)	29.7	18.4	(11.3)	31.5	29.9	(1.6)	
19	Projects < $5 million	3.2	2.5	(0.7)	19.3	19.3	(0.0)	21.2	27.3	6.2	16
20	**Subtotal**	44.0	34.0	(10.0)	184.7	161.7	(23.0)	203.4	214.5	11.1	
21	**Performance Efficiency and Improvement**										
22	Plant Improvements*	1.8	1.2	(0.6)	8.7	8.8	0.0	10.6	10.3	(0.2)	
23	Projects < $5 million	1.3	1.2	(0.0)	6.0	4.5	(1.5)	7.0	5.5	(1.5)	
24	**Subtotal**	3.1	2.4	(0.7)	14.7	13.3	(1.4)	17.6	15.8	(1.8)	
25	**Growth/Customer Requirements**										
26	Hydrovac Sanitary Grit Treatment Facility	-	0.1	0.1	8.4	7.3	(1.1)	8.4	7.6	(0.8)	
27	Projects < $5 million	-	0.9	0.9	1.5	2.0	0.4	1.5	2.1	0.6	
28	**Subtotal**	-	1.0	1.0	9.9	9.3	(0.6)	9.9	9.7	(0.3)	
29	**Health, Safety and Environment**										
30	Projects < $5 million	0.6	0.4	(0.1)	3.9	2.1	(1.8)	4.5	5.5	1.0	
31	**Regulatory**										
32	Projects < $5 million	-	1.3	1.3	-	1.3	1.3	-	2.8	2.8	17
33	**Capital Expenditures, net of Contributions**	**47.7**	**39.2**	**(8.5)**	**213.3**	**187.7**	**(25.6)**	**235.4**	**248.3**	**12.9**	

* Plant Improvements project is a consolidation of the individual plant improvements ($2.9M), control system upgrades ($1.0M), control system operational improvements program ($2.6M), and instrumentation upgrades ($4.1M) projects approved in the 2017 to 2021 PBR.

Explanations for differences between PBR forecast capital expenditures for 2017 to 2021 and EWSI's current projection in excess of $2.0 million include:

1. **Build Pipe Racks** – $10.8 million (new project). This project provides for construction of an above-ground pipe rack network to allow the relocation of biogas piping, natural gas, glycol heating lines and electrical circuits out of underground tunnels at the Gold Bar WWTP. Moving these utilities above ground will reduce tunnel ventilation upgrade costs, enable future expansion of process piping, facilitate compliance with building and fire codes, and provide a safer working environment.
2. **Replace 2.5 km of Sludge lines** – $7.8 million (new project). This project provides for replacement of a 2.5 km section of the sludge line between the Clover Bar lagoons and the North Saskatchewan River. Upon inspection this section of the sludge line was found to be in such poor condition that repairs and/or rehabilitation was not financially viable and full replacement was required.
3. **Clarifier Chain Replacement** – $5.3 million (132%) greater than forecast. The costs of this project have increased significantly following the premature failure of stainless steel clarifier chains due to unexpected localized corrosion. These chains are being replaced with plastic loop chains, which have a better performance record at Gold Bar WWTP. These particular chains required earlier than scheduled rehabilitation given the criticality of continuously running the primary and secondary clarifiers, which is crucial to meeting regulatory requirements for final effluent quality from the Gold Bar WWTP
4. **Sludge Line Upgrades** – $4.7 million (138%) greater than forecast. The PBR forecast only included the costs of cleaning and inspecting the sludge lines between Gold Bar WWTP and the Clover Bar Lagoons. Inspections on older sections showed that the sludge lines were in poor condition and required significant additional capital expenditure under this project for rehabilitation/replacement to ensure that these pipelines could continue to operate with minimal risk of leakage.
5. **Mechanical Rehabilitation Program** – $4.5 million (29%) greater than forecast, reflecting expenditures on emergency repairs. The most significant repairs included repair of a leaking glycol heating line and mechanical rehabilitation of the secondary clarifiers, which were originally expected to last beyond the current PBR term.
6. **Structural Rehab Secondaries 1-8** – $3.8 million (22%) greater than forecast. The purpose of this program is to complete the structural rehabilitation of the secondary clarifiers and bioreactors at the rate of one clarifier and bioreactor rehabilitation per year. The increase in program spending is primarily due to updated cost estimates and a better understanding of the current condition of the clarifiers for the rehabilitation work performed to date.
7. **Structural Rehabilitation Program** – $3.8 million (50%) greater than forecast, primarily attributable to the costs of addressing greater than expected concrete deterioration at the Gold Bar Diversion Structure caused by long-term H_2S gas exposure. This increase has been partially offset by deferral of lower priority structural rehabilitation sub-projects.
8. **Digester 3 Upgrades** – $3.1 million (27%) greater than forecast. The increased project costs are primarily attributable to costs associated with addressing unanticipated structural integrity issues identified during construction, which resulted in increases to the project scope.
9. **Distribution Chamber Reconstruction** – $3.0 million (79%) greater than forecast. The increase in the forecast cost of this project results from higher than expected competitive bids from contractors,

as well as higher than expected costs to demolish the distribution chamber and to construct the lift station tie-ins.

10. **Operations Centre at Mid-Point Entrance** – $11.9 million (61%) less than forecast. The reduction in project spending is reflective of design and scope adjustments that incorporate the results of public consultation, which also resulted in Gold Bar's recent commitment to complete all future construction within the existing footprint of the Gold Bar WWTP. In place of the Mid-Point Entrance project, to provide a new upgraded control room and the hygiene facilities necessary for maintenance workers within the existing footprint of the Gold Bar WWTP, there will be a renovation of the existing Centre of Excellence Building to house new control and hygiene facilities (Mid-Point Entrance Project) and the Maintenance Hygiene Project
11. **Digester 4 Upgrades** – $10.6 million (88%) less than forecast. EWSI completed an overall assessment of the solids loading to the Gold Bar WWTP. The assessment determined that Digester 4 upgrades were not required in the short term to meet treatment requirements. As such, EWSI was able to defer this project to the 2022-2024 PBR term to allow for the structural issues in Digester 3 to be addressed, and allow for prioritization of other higher priority wastewater plant projects that were required during the 2017-2021 PBR term.
12. **Headworks and Primary Aeration System Upgrades** – $5.3 million (79%) less than forecast, reflecting a reduction in the scope of this project following EWSI's determination that restoring aeration in the main influent channels was not required. This was because solids deposition rates in the primary influent channels at the Gold Bar WWTP had decreased due to recent upgrades of Grit Tanks 4/5 and Screens 7/8, and currently observed solids accumulation rates in the channels did not present operations and maintenance problems.
13. **Utility Hot Water System Rehabilitation** – $ 4.9 million (35%) less than forecast. The decrease in project spending is primarily attributable to the deferral of certain non-critical upgrades to future PBR periods. This allows these upgrades to be better coordinated with other upgrades to the heating system.
14. **Buildings and Site Rehabilitation Program** – $4.7 million (37%) less than forecast. The scope of this project was reduced following an internal review, which concluded that certain sub-projects could be safely deferred, allowing resources to be focused on unanticipated, higher-priority projects.
15. **Square 1 Gas Room Replacement** – $4.7 million (30%) less than forecast, reflecting scope and design changes that are expected to more efficiently resolve the identified process safety risks, at a lower total cost.
16. **Reliability and Life Cycle Improvements < $5.0 million** – $6.2 million (29%) greater than forecast. The projected increase in this category results primarily from the purchase and installation of new onsite emergency back up power generation ($2.0 million); unanticipated preliminary scope and design costs associated with a new Dewatering Facility ($2.9 million); and increased electrical program spending due to a combination of unforeseen construction difficulties and the replacement of more electrical equipment than was initially estimated ($1.8 million).
17. **Regulatory < $5.0 million** – $2.8 million (100%) greater than forecast. The projected increase in this category results primarily from an Air Quality Monitoring Station project ($1.6 million), which includes the installation of an air quality monitoring station between the Gold Bar WWTP and communities to the south of the plant. The monitoring station was added to Gold Bar WWTP's Approval to Operate

effective July 1, 2019 following collaborative discussions with AEP on reducing air quality impacts of the wastewater treatment process.

3.4.2 Construction Work in Progress

Wastewater's rate base consists of plant in service. If a capital project has not been completed (i.e. not placed into service) during the year, the capital expenditures on that project remain in Construction Work in Progress and are excluded from the rate base. The 2020 year-end balance of Wastewater's Construction Work in Progress is $7.9 million greater than forecast, reflecting changes in the timing of project completion.

Table 3.4.2
Wastewater Treatment Construction Work in Progress
($ millions)

		A	B	C	D
Construction Work in Progress		**2020**		**2017-2020**	
		PBR Forecast	**Actual**	**PBR Forecast**	**Actual**
1	Balance, beginning of period	24.3	33.8	19.2	22.6
2	Capital Expenditures	47.7	39.2	213.3	187.8
3	Capital Additions	(59.2)	(52.4)	(219.7)	(189.7)
4	**Balance, end of period**	**12.8**	**20.7**	**12.8**	**20.7**

The PBR plan allows EWSI to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using AFUDC. In 2020, because of the higher average balance of Construction Work in Progress, AFUDC included in capital expenditures on eligible projects amounted to $1.7 million, compared to the PBR forecast amount of $1.3 million.

3.5 Operational Performance

3.5.1 Water Quality and Environmental Index

The Water Quality and Environmental index is a composite measure intended to assess EWSI's impact on the environment through the quality of the wastewater effluent returned back to the North Saskatchewan River and the effectiveness of environmental management programs.

Table 3.5.1
Water Quality and Environmental Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Water Quality Factor	The value of the Wastewater Effluent Limit Performance, which aggregates measures of the percentage of the discharge limit for five parameters in the Gold Bar wastewater treatment plant's final effluent.	< 28.0%	19.0%	1.476
Environmental Incident Factor	The actual number of environmental incidents that are both reportable and preventable	< 10	1	10.00
			Average Index	5.738
			Index Standard Points	55.0
			Total Actual Points	315.6
			Maximum Available Points Including Bonus Points	60.5
			Total Points Earned	**60.5**

2020 Highlights

- **Wastewater Effluent Limit Performance Index:** Maintenance efforts in previous years to repair and maintain chains and drive mechanisms resulted in increased availability of secondary clarifiers which in turn improved process operations. As a result, the 2020 WELPI was the lowest in the past five years.
- **Environment Incident Management:** In 2020, there were no reportable incidents related to treated wastewater effluent discharged to the North Saskatchewan River. However, there was one reportable environmental incident. The incident was a result of not meeting the daily average oxidation-reduction potential in the EPT scrubber for one day, which is a requirement under the EWSI's Wastewater Treatment Plant Approval to Operate. Enhanced monitoring and alarming, procedural updates, and training were added to existing processes to prevent reoccurrence of this issue.

2021 Areas for Improvement

- **Wastewater Effluent Limit Performance Index:** In 2021, there will be an increased focus on the use of "winter mode" for the secondary treatment process which involves increased aeration in the bioreactors. There will also be a continued focus on limiting unplanned downtime to maximize treatment levels.
- **Environment Incident Management:** Continued efforts to manage odour-related incidents with planned installation of an air quality monitoring station south of the Gold Bar plant in 2021. This will be in addition to the existing two air quality stations currently near the plant and the onsite monitoring system installed in 2020.

3.5.2 Customer Service Index

Wastewater's customer service index for the 2017-2021 PBR term includes three equally weighted odour metrics. These metrics recognize that Wastewater's customer interactions typically relate to odour concerns from customers located close to the Gold Bar Wastewater Treatment Plant.

Table 3.5.2
Customer Service Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
H_2S – 1 Hour Exceedance Factor	The number of hourly exceedances of the 1 hour limit averaged between Gold Bar and Beverly air quality monitoring stations.	< 6	1	6.000
H_2S – 24 Hour Exceedance Factor	The number of hourly exceedances of the 24 hour limit averaged between Gold Bar and Beverly air quality monitoring stations.	< 2	0	2.000
Scrubber Uptime Factor	The percentage of time that the scrubbers are on line.	> 90%	99.4	1.104
			Average Index	3.035
			Index Standard Points	15.0
			Total Actual Points	45.5
			Maximum Available Points Including Bonus Points	16.5
			Total Points Earned	**16.5**

2020 Highlights

- **H_2S – 1 and 24 Hour Exceedance Factor:** There was one 1-hour H_2S exceedance in 2020. Continued fence line H_2S monitoring and newly installed odour monitoring software allowed Gold Bar operations to identify elevated levels of H_2S and avoid potential exceedances. Two new carbon scrubbers at the grit and screenings buildings were also commissioned which reduced the amount of H_2S emitted from those operational areas.
- **Scrubber Uptime Factor:** Redundancy installed in the scrubber systems in 2018, helped to increase the scrubber uptime in 2020. Additional focus has been placed on planning preventative and corrective maintenance activities to limit scrubber downtime.

2021 Areas for Improvement

- **H_2S – 1 and 24 Hour Exceedance Factor:** Installation of a new air quality monitoring station south of the Gold Bar WWTP is planned for 2021.
- **Scrubber Uptime Factor:** The current preventative maintenance program will be continued to limit scrubber downtime. Construction of a new EPT scrubber with increased redundancy is planned to start in 2021.

3.5.3 System Reliability and Optimization Index

The system reliability and optimization index is a measure of the performance of the Gold Bar Wastewater Treatment Plant and the degree to which the wastewater treatment system is optimized to minimize its impact on the environment.

Table 3.5.3
System Reliability and Optimization Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Enhanced Primary Treatment Factor	The percentage of time that the enhanced primary treatment facility ran during wet weather events where the influent flow rate exceeded the EPT event threshold.	> 80.0%	100.0%	1.250
Biogas Utilization Factor	The percentage of biogas utilized, calculated as the volume of biogas produced less the volume flared divided by the volume produced.	> 60.0%	83.6%	1.393
Energy Efficiency Factor	The energy used in all wastewater facilities in kWh divided by the volume of wastewater effluent that either receives ultraviolet (UV) treatment or is membrane plant effluent.	< 514	489	1.051
			Average Index	1.231
			Index Standard Points	15.0
			Total Actual Points	18.5
			Maximum Available Points Including Bonus Points	16.5
			Total Points Earned	**16.5**

2020 Highlights

- **Enhanced Primary Treatment (EPT) Factor:** The EPT clarifiers were proactively cleaned and inspected in 2020. This minimized downtime and maximized availability for primary treatment.
- **Biogas Utilization Factor:** In 2020, heating requirements were slightly higher and overall biogas production was slightly lower than planned. However, due to optimization of boiler and flare operation the plant was still able to utilize more and flare less biogas than in previous years.
- **Energy Efficiency Factor:** Energy consumption in 2020 was average, but slightly higher effluent flow volumes resulted in a lower Energy Efficiency Factor, as compared to previous years.

2021 Areas for Improvement

- **Enhanced Primary Treatment (EPT) Factor:** Planning for proactive replacement of assets nearing end-of-life to minimize unplanned downtime will continue in 2021.
- **Biogas Utilization Factor:** Operations will continue to concentrate on maximizing biogas utilization by running as many boilers on biogas as possible before relying on natural gas.
- **Energy Efficiency Factor:** During 2021, there will be a focus on optimization of secondary aeration blower operation and a decrease in the use of a lag blower when not operationally necessary.

3.5.4 Safety Index

EPCOR and EWSI are committed to a safe, healthy lifestyle and demonstrate this through care and concern for people. The safety index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public

Table 3.5.4
Safety Index

Index Component	PBR Performance Measure	Standard	Actual Score	Index
Near Miss Reporting Factor	The number of near miss reports entered in the ERS system.	>220	199	0.905
Work Site Inspection Factor	Number of Work Site Inspections and observations completed per year.	>919	1,015	1.104
Lost Time Frequency Factor	The actual lost time frequency rate.	<0.75	0.00	2.000
All Injury Frequency Factor	The actual all injury frequency rate	<1.50	0.64	2.328
			Average Index	1.584
			Index Standard Points	15.0
			Total Actual Points	23.8
			Maximum Available Points Including Bonus Points	16.5
			Total Points Earned	**16.5**

2020 Highlights

- **Near Miss Reporting Factor:** With consideration to the impact of COVID-19 pandemic, near miss reporting was slightly lower than past years. However, even with the slight decrease in reporting, near miss and hazard identification reporting continued to be an effective means to proactively identify hazards and implement corrective actions to mitigate potential harm to employees, contractors and members of the public.
- **Work Site Inspections / Observations Factor:** Work site inspections and observations continued to be a successful leading indicator that provided leadership and employees the opportunity to engage in field activities, proactively identify areas of improvement, and verify conformance to EWSI standards.
- **Lost Time Frequency Rate Factor:** In 2020, Gold Bar exceeded the lost time frequency rate factor by having no lost time events.
- **All Injury Frequency Rate Factor:** In 2020, Gold Bar recorded 1 recordable incident (Medical Treatment) when a worker suffered a burn to their wrist while performing calibration duties.

2021 Areas for Improvement

- **Near Miss Reporting Factor.** With consideration of the ongoing impact of the COVID-19 pandemic, there will be a heighted focus on the reporting of near miss and hazard identification events throughout 2021 to ensure employees keep their mind on task and continue with proactive reporting to mitigate hazards before an event occurs.

- **Work Site Inspections / Observations Factor.** With consideration of the ongoing COVID-19 pandemic, EWSI will monitor inspection and observation activities and look for opportunities to continue to conduct proactive field engagements.
- **Lost Time Frequency Rate & All Injury Frequency Rate Factors.** Water Canada has developed risk profiles specific for wastewater treatment plants. This will enable EWSI to identify top health and safety risks specific to work environments and to implement mitigating factors where possible. The objective will be to ensure effective and meaningful controls are in place to reduce the potential for harm to employees, contractors, and the public.

3.6 Rates and Bill Comparisons

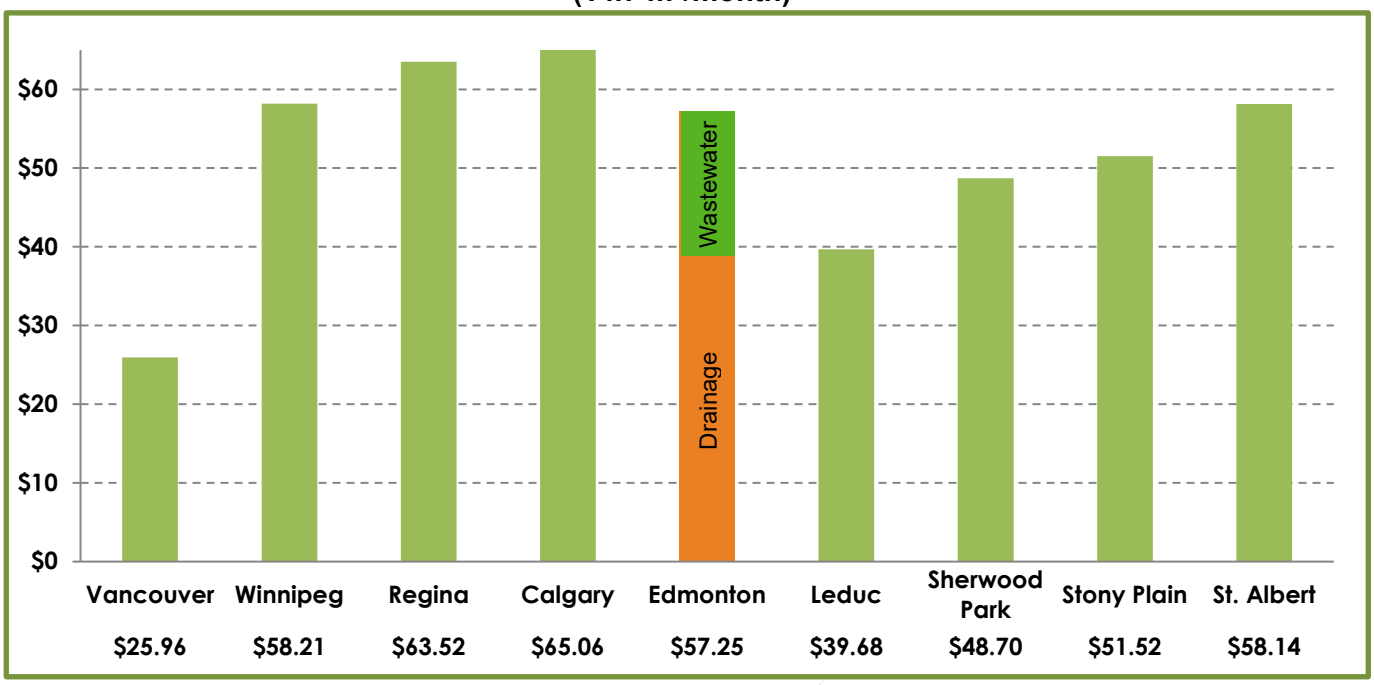
EWSI's wastewater (combined wastewater treatment, sanitary and stormwater) bill comparisons for 2020 are based on the published sanitary and stormwater rates for Calgary, Vancouver, Winnipeg and Regina, as well as four local communities. These bill comparisons represent the total cost to the customer and include fixed charges, consumption charges and any other applicable surcharges.

Unlike most cities, where wastewater treatment services and drainage services are combined, EWSI's Wastewater Treatment operations is only responsible for wastewater treatment and the operations and maintenance of sanitary, storm and combined sewer systems are provided through EPCOR Drainage Services. Accordingly, wastewater bill comparisons are based on the EWSI's combined wastewater treatment bill and its sanitary and stormwater bills.

3.6.1 Residential Wastewater Bills

Figure 3.6.1 provides a comparison of residential household wastewater bills for residential household consumption of 14.7 m^3 per month, the average residential customer consumption per month in Edmonton in 2020.

Figure 3.6.1
2020 Monthly Residential Wastewater Bill Comparison
(14.7 m^3/month)



Unlike water services which are relatively consistent among cities and communities, the nature and extent of wastewater treatment and drainage services vary significantly between cities and communities due to differences in wastewater treatment processes, the inclusion of certain services in property taxes, and geographic and climatic factors which affect the level of investment in and approach to flood mitigation and stormwater services. In particular, stormwater charges are often included as a component of taxes.

Edmonton's $57.25 average monthly bill from Figure 3.6.1 includes Wastewater charges of $19.30 and Drainage charges of $37.95 (inclusive of both sanitary and storm charges). While the total bill is higher than Vancouver, it is lower than Calgary and Regina, the two cities where drainage and wastewater treatment are most comparable to Edmonton. EWSI notes that cities across Canada are experiencing increased risk of flooding related to climate change and that substantial investments are needed to assess and address climate change-related flood mitigation.

Table 3.6.2
2020 Monthly Commercial Wastewater Bill Comparison
($ per month)

		A	B	C	D
	Monthly Bill - $ per month	**Small**	**Medium**	**Large**	**Extra Large**
1	**Monthly Consumption** - m^3	**10**	**250**	**1,000**	**5,000**
2	Vancouver	20.37	305.32	1,244	6,075
3	Calgary	60.72	474.61	1,768	8,666
4	Regina	55.00	497.20	2,062	9,795
5	Winnipeg	44.98	736.25	2,878	14,185
6	**Edmonton**	**47.77**	**563.77**	**2,303**	**11,490**
7	St. Albert	76.36	522.76	1,918	9,358
8	Sherwood Park	40.08	479.28	1,852	9,172
9	Stony Plain	64.84	734.44	2,831	13,991
10	Leduc	31.30	458.50	1,794	8,914

4 Drainage Services

4.1 Accomplishments and Challenges

In 2020, Drainage Services significant accomplishments included:

1) Achieving Operating Efficiencies

EPCOR's commitments to the City of Edmonton included the realization of a 1% savings per year in operating costs, or approximately $5.9 million of savings in 2022. Between 2018 and 2020, Drainage undertook key initiatives to ensure that it is able to achieve this level of savings, including:

- Building synergies across EWSI – Operational functions, including Private Development and Inspection Services, One Water Planning, Quality Assurance and Environment, Customer Analytics, Procurement, Inventory Management, and Operational Excellence have been combined with Water Services, providing efficiencies in the delivery of these functions across Water, Wastewater Treatment and Drainage;
- Reducing contractor and consultant costs – Drainage decreased the use of contractors and consultants and increased the use of internal resources to provide services that had previously been provided by contractors or consultants, such as inspections, engineering and design work, and environmental consultation and assessment;
- Reducing lost time incidents – Drainage has successfully implemented EPCOR's Health & Safety Management System within Drainage. Between 2018 and 2020, there were seven lost time incidents in Drainage, compared to 42 lost time incidents in the four years prior to the transfer. Not only did Drainage achieve a 79% reduction in total injuries, but incident severity was also reduced by 75%. Besides reducing the direct costs of medical leave for injured employees and overtime for replacement workers, WCB rebates have increased as a result of Drainage's improved safety;
- Optimizing shift scheduling – Drainage has identified and implemented three opportunities to reduce overtime through shift scheduling: adopting improved work schedules in System Control; establishing a dedicated trouble response crew; and improving scheduling during spring run-off;
- Strengthening financial controls over cost recoveries - Drainage has implemented EPCOR processes to ensure the completeness, accuracy and timeliness of collection of claims for third party damages, and recovery of the costs of service locates; and
- Increasing fleet fuel efficiency – Drainage has improved fleet fuel efficiency since the transfer by replacing older vehicles with newer more fuel-efficient vehicles and with the implementation of telematics which will also reduce vehicle maintenance costs. Telematics has been implemented very recently and we expect to realize additional efficiencies in future years from this implementation.

2) **Commencing work on SIRP**

Drainage commenced work on executing its comprehensive SIRP strategy in 2020. This twenty year strategy is based on a risk methodology aligned with the City of Edmonton's Climate Change Adaptation and Resilience Strategy. The SIRP strategy has been very well received and, through Drainage's efforts, Edmonton's rating from the Intact Centre on Climate Adaptation on its flood mitigation plans has increased from "C" to "B+"[2]. This rating is expected to improve as work is completed.

SIRP is also expected to provide major savings in capital costs. SIRP's estimated capital cost of $1.6 billion over twenty years provides direct savings of between $0.6 billion to $2.9 billion relative to the 2017 City Wide Flood Mitigation Plan, far surpassing EWSI's commitment to achieving a 10% capital cost saving on the City's 10-year plan.

3) Commencing work on CORe

Drainage also commenced work on CORe, its other major strategic initiative. Unlike previous odour mitigation plans that focused on the controlled release of hydrogen sulphide (H_2S) gas which is extremely odourous and corrosive, the CORe strategy focuses on preventing or minimizing the formation of H_2S gas, which will reduce community odour impacts and lengthen the life of sewer network assets. Work has begun on both the capital and operating components of this plan, and costs for continuing this work are included in the Drainage's 2022-2024 PBR Application.

4) Implementing Capital Efficiency Initiatives

Between 2018 and 2020, Drainage implemented capital cost efficiency initiatives, including:

- The use of internal engineering resources to reduce engineering and design costs for routine projects. Prior to the transfer to EPCOR, engineering and project management costs comprised 15% to 20% of the total capital project budgets in Drainage Services. By relying on its standard processes and GIS-based design tools, EWSI has achieved a reduction in engineering and project management costs to 5% of the cost of routine projects.
- The use of Master Service Agreements and improved procurement processes to reduce costs;
- Completion of Project Management Methodology Review and procurement process improvements to generate efficiencies;
- Reducing crew sizes, resulting in completing the same quantity of work with significantly fewer resources. While this change has been implemented recently without any layoffs and is still being refined, it is anticipated that it will result in significant labour cost reductions for work performed by internal resources; and
- Utilizing central dispatch of shared tandem trucks, rather than having one truck per crew. This reduces the amount of time that tandem trucks sit idle and significantly reduced the number of contract tandem trucks that have needed to be hired. While this change has been implemented

[2] https://www.intactcentreclimateadaptation.ca/wp-content/uploads/2021/02/16-Cities-Flood-Preparedness.pdf

recently and is still being refined, an immediate reduction in the overall cost of tandem trucks was observed initially after implementing this change.

These initiatives, as well as other smaller initiatives to improve capital project management, are expected to result in more significant capital cost savings over time as these initiatives are fully implemented across Drainage Services. These initiatives on their own are expected to contribute significantly to achieving the 10% capital cost savings commitment. When combined with SIRP savings that are approximately triple the promised savings, the total capital efficiencies are far in excess of the level committed to prior to the transition.

Other accomplishments are detailed in Drainages' 2020 Operating Plan review in section 5.2.

4.2 Customers and Consumption

Drainage provides sanitary services to the same customers served by Wastewater Treatment, while Drainage storm customer's charges are based on land size and other factors. Therefore, actual customer counts, consumption per customer and total consumption are the same as those of Wastewater Treatment and actual to forecast differences in Drainage's customer counts and consumption are attributable to the same factors.

4.3 Financial Performance

As explained in Appendix A.2, the drainage rates set out in Bylaw 18100 reflect EWSI's commitment to limit average annual rate increases to 3% over the period from January 1, 2018 to March 31, 2022. Therefore, there is no City of Edmonton-approved PBR forecast to serve as the basis of comparison for financial performance. Instead, as in 2018 and 2019, Drainage's 2018 EPCOR drainage budget, adjusted to incorporate annual revenue increases of 3% and annual operating expense increases of 2%, serves as a proxy for a PBR forecast, providing a basis for assessing actual financial performance.

Drainage's revenue requirements are summarized on Table 4.3 below. Explanations of forecast to actual variances are provided in sections 4.3.1 to 4.3.6.

Table 4.3
Drainage Revenue Requirements
($ millions)

		A	B	C	D
	Summary of Revenue Requirements	**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	Drainage Rate Revenue				
2	Sanitary utility revenue	133.2	131.0	388.0	376.5
3	Stormwater utility revenue	66.6	75.4	194.0	204.7
4	Drainage Rate Revenue	199.8	206.3	582.0	581.3
5	Drainage Revenue Requirement				
6	Operating expenses	121.0	124.8	350.1	352.2
7	Other revenue	(8.8)	(8.0)	(25.5)	(26.7)
8	Depreciation and amortization	35.3	36.2	98.3	100.9
9	Return on rate base financed by debt	33.1	23.1	82.4	64.9

	Summary of Revenue Requirements	A	B	C	D
		2020		2018-2020	
		Budget	Actual	Budget	Actual
10	Return on rate base financed by equity	19.1	30.3	76.7	89.9
11	**Drainage Revenue Requirement**	**199.8**	**206.3**	**582.0**	**581.3**
12	**Return on Rate Base Financed by Equity**	**3.25%**	**4.95%**	**4.46%**	**5.03%**

4.3.1 Revenue

Drainage's rate revenues are derived from both sanitary utility and stormwater utility services. Sanitary utility revenues are comprised of variable monthly charges based on monthly metered water consumption and flat monthly service charges based on the meter size. Stormwater utility revenues are based on area, development intensity, and run-off coefficients based on the zoning of individual land parcels. Rates for both sanitary and stormwater utility services from January 1, 2018 to March 31, 2022 are prescribed in Bylaw 18100 and incorporate an average annual rate increase of 3%.

Table 4.3.1 below provides a comparison of 2020 and 2018-2020 Drainage revenues to the budget:

Table 4.3.1
Drainage Revenue
($ millions)

	Drainage Revenue	A	B	C	D
		2020		2018-2020	
		Budget	Actual	Budget	Actual
1	Sanitary Utility				
2	Flat Monthly Service Charges				
3	Residential	37.6	33.9	109.7	97.3
4	Multi-Residential	0.5	2.3	1.6	6.5
5	Commercial (including large wholesale)	2.8	5.7	8.2	16.6
6	Flat Monthly Service Charges	41.0	41.9	119.5	120.4
7	Variable Monthly Charges				
8	Residential	48.0	50.9	139.9	139.5
9	Multi-Residential	18.8	19.4	54.8	54.0
10	Commercial	24.1	17.7	70.2	59.2
11	Large wholesale	1.3	1.1	3.7	3.4
12	Variable Monthly Charges	92.2	89.1	268.6	256.1
13	**Sanitary Utility Revenue**	**133.2**	**131.0**	**388.0**	**376.5**
14	Stormwater Utility				
15	Residential	35.1	40.4	102.3	110.3
16	Multi-Residential	3.4	4.3	10.0	11.7
17	Commercial	28.1	30.7	81.7	82.7
18	**Stormwater Utility Revenue**	**66.6**	**75.4**	**194.0**	**204.8**
19	**Drainage Rate Revenue**	**199.8**	**206.3**	**582.0**	**581.3**
20	Other Revenue	8.8	8.0	25.5	26.7
21	**Total Drainage Revenue**	**208.5**	**214.3**	**607.5**	**607.9**

In 2020, Drainage's rate revenues were $6.5 million greater than budget and $0.7 million less than budget for 2018-2020. Higher than budget revenues included $7.4 million in revenues related to non-routine adjustments, including $3.2 million for CORe, $3.2 million for SIRP and $0.8 million for LRT relocations. Without the NRAs, revenues would have been $0.8 million less than budget because of lower than

forecast consumption. The COVID-19 pandemic shifted consumption from the commercial customer class to the residential and multi-residential customer classes. Even so, Drainage experienced an overall decrease in consumption because of business closures. Besides rate revenues, Drainage has Other Revenue derived from biosolids management services provided to the Alberta Capital Region Wastewater Commission, application and connection fees, wastewater transfer station services, late payment fees, miscellaneous fees pursuant to third party agreements, and other incidental services. The variance in these revenues is largely attributable to biosolids, where lower than planned activity and lower processed volumes resulting from the composter outage, resulted in lower than budget revenue.

4.3.2 Operating Expenses by Function

Table 4.3.2 below compares Drainage's 2020 actual operating expenses to its budget:

Table 4.3.2
Operating Expenses by Function
($ millions)

	Function	A	B	C	D
		2020		2018-2020	
		Budget	Actual	Budget	Actual
1	Drainage Operations				
2	Maintenance	31.3	31.0	89.4	82.2
3	Biosolids	17.0	15.6	49.7	49.5
4	Monitoring and Compliance	4.3	3.8	13.2	12.4
5	Other	0.5	0.6	3.2	3.8
6	Drainage Operations	53.1	51.0	155.4	148.0
7	Planning and Project Support				
8	Planning	10.4	6.0	32.9	23.1
9	Project Support	5.2	8.9	10.5	21.0
10	NRA – SIRP	-	2.6	-	2.6
11	NRA - CORe	-	0.5	-	0.5
12	Planning and Project Support	15.6	18.0	43.4	47.2
13	Billing and Meter Reading				
14	Meter Reading	6.7	6.8	19.1	19.5
15	CUS Charges	0.6	1.4	1.6	3.4
16	Billing and Meter Reading	7.3	8.2	20.8	22.9
17	Drainage Services Administration				
18	Drainage Shared Services	15.7	15.2	44.4	45.3
19	Incentive and Other Compensation	2.2	4.4	6.4	8.1
20	Drainage Services Administration	17.9	19.6	50.8	53.4
21	Corporate Shared Services	16.6	17.4	48.6	50.4
22	Franchise Fees and Property Taxes				
23	Franchise Fees	9.5	9.7	29.1	27.9
24	Property Taxes	1.1	0.9	2.1	2.6
25	Franchise Fees and Property Taxes	10.6	10.6	31.1	30.5
26	**Total Operating Expenses by Function**	**121.0**	**124.8**	**350.1**	**352.2**

Total operating expenses for 2020 were $3.8 million greater than budget ($2.1 million greater for 2018-2020). Key factors contributing to this difference include:

- **Biosolids** - $1.4 million less than budget ($0.2 million less for 2018-2020). This function includes the storage and management of biosolids generated by the Gold Bar and Alberta Capital Regional

wastewater treatment plants. As in 2019, lower than budgeted expenses are primarily attributable to lower than planned activity and lower processed volumes resulting from the composter outage.

- **Monitoring and compliance** - $0.5 less than budget ($0.8 million less for 2018-2020). Lower than budget expenses reflect lower than anticipated contractor costs of $0.3 million ($0.4 million for 2018-2020), lower staff costs of $0.1 million ($0.3 million for 2018-2020) and capitalization of a higher portion of labour costs of $0.1 million ($0.1 million for 2018-2020).
- **Planning -** $4.4 million less than budget ($9.8 million less for 2018-2020). This function includes infrastructure, system and administration planning. Lower than budget expenses reflect lower than anticipated contractor costs of $2.3 million ($5.5 million for 2018-2020), capitalization of a higher than anticipated portion of staff costs of $0.3 million ($1.4 million for 2018-2020), savings of $0.5 million ($0.5 million for 2018-2020) related to the transfer of the customer services function to Water (now recovered through CUS charges), and lower staff costs net of vacancy factor of $1.3 million ($1.3 million for 2018-2020). The 2018-2020 variance also includes savings of $0.9 million related to the transfer of lot grading inspection services back to the City of Edmonton in 2018. The lot grading inspection cost savings were offset with a proportionate decrease in associated revenues.
- **Project Support -** $3.7 million greater than budget ($10.5 million greater for 2018-2020). This function includes surveying and engineering (conceptual, preliminary design or detailed design), project management, in-house construction, and emergency repairs. Higher than budgeted expenses include: $3.1 million of additional salary costs ($10.2 million for 2018-2020) related to design and construction work that had originally been budgeted as capital expenditures; and $0.6 million of higher than anticipated contractor costs ($1.8 million for 2018-2020), primarily related to project management. The 2018-2020 variance also includes $1.5 million of cost recoveries resulting from higher equipment utilization in operations in 2018.

  This category of costs illustrates the impact of the differences in accounting treatment between the City of Edmonton and EPCOR. Specifically, the PBR budget was prepared using City of Edmonton's Drainage's capitalization policies, which included capitalizing preliminary design costs (i.e. the costs incurred before there was a specific project). The actual results reflect EWSI capitalization policies, where most preliminary design costs are expensed, and where additional costs – capital overhead, higher salary burden, major inspections, abandonments, etc., are capitalized.
- **NRAs for SIRP and CORe -** $2.6 million for SIRP and $0.5 million for CORe. In 2020. EWSI commenced work on these programs following approval for NRAs on December 2, 2019. Additional information on these NRAs is provided in section 1.5.
- **Billing and Meter Reading -** $0.9 million greater than budget ($2.1 million greater for 2018-2020. Higher than budgeted expenses include metering and customer service support costs from EPCOR Energy Services, customer service costs transferred to Water (see Planning above), and unbudgeted call centre support costs from the City of Edmonton.
- **Corporate Shared Services** - $0.8 million greater than budget ($1.8 million greater for 2018-2020). Higher than budgeted expenses reflect growth in assets and revenue, which are key corporate cost allocators, and increases in corporate IT costs charged directly to Drainage.
- **Drainage Shared Services** - $0.5 million less than budget ($0.9 million more for 2018-2020). Lower than budgeted costs in 2020 and higher than budgeted costs for the 2018-2020 reflect organizational

changes in almost all administrative functions. These changes are primarily related to Drainage transition and integration.

- **Incentive and Other Compensation** - $2.2 million greater than budget ($1.7 million greater for 2018-2020). Higher than budgeted expenses include $0.7 million of incentive compensation ($0.3 million less for 2018-2020) and year-end payroll adjustments of $1.5 million related to long-term disability. The 2018-2020 variance also includes $0.5 million in adjustments to corporate benefits and a WCB refund of $0.1 million.
- **Franchise Fees and Property Taxes -** ($0.6 million less for 2018-2020). As with Water and Wastewater, lower than forecast franchise fees reflect lower than forecast revenues. This is partially offset by higher property taxes, which were not included in the budget as no accurate cost estimate was available at the time of budget preparation.

Variances in other operating expense functions and sub-functions are not significant, either individually or in aggregate.

4.3.3 Operating Expenses by Cost Category

Table 4.3.3 below shows operating expenses by cost category for Drainage Operations, Planning, Project Support Costs and Drainage Services Administration, where cost categories differ from the sub-functions in Section 4.3.2.

Table 4.3.3
Operating Expenses by Cost Category
($ millions)

		A	B	C	D
	Cost Category	**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	Drainage Operations				
2	Staff Costs and Employee Benefits	26.8	25.9	76.8	75.3
3	Contractors and Consultants	21.6	19.8	62.1	56.1
4	Materials and Supplies	0.2	-	0.6	0.3
5	Other	4.4	5.2	15.9	16.2
6	Drainage Operations	53.1	51.0	155.4	148.0
7	Planning and Project Support				
8	Staff Costs and Employee Benefits	10.5	13.9	29.0	39.2
9	Contractors and Consultants	4.5	3.2	15.1	10.4
10	Other	0.6	0.9	(0.7)	(2.4)
11	Planning and Project Support	15.6	18.0	43.4	47.2
12	Drainage Shared Services				
13	Staff Costs and Employee Benefits	12.2	14.2	34.2	35.9
14	Contractors and Consultants	5.2	4.1	14.8	12.6
15	Other	0.4	1.4	1.7	4.9
16	Drainage Shared Services	17.9	19.6	50.8	53.4

The information presented in this table supports the explanations of differences between 2020 actual and budget expenses provided in Section 4.3.2. Accordingly, no additional explanations are considered necessary.

4.3.4 Depreciation and Amortization

Drainage's depreciation expense and amortization of contributed assets for 2020 are shown in Table 4.3.4 below:

Table 4.3.4
Depreciation and Amortization
($ millions)

		A	B	C	D
Depreciation and Amortization		**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	Provision for depreciation	76.6	78.7	213.1	221.2
2	Amortization of contributions	(41.3)	(42.5)	(114.7)	(120.3)
3	**Depreciation, net**	**35.3**	**36.2**	**98.3**	**100.9**

Drainage's net depreciation expense is $0.9 million greater than budget ($2.6 million greater for 2018-2020). These differences reflect higher than budget asset additions resulting from the changes to Drainage's capital program discussed in Section 4.4. The 2018-2020 difference also includes a $1.5 million variance related to changes in depreciation rates in 2018. At the time the 2018 budget was prepared, Drainage had not completely finalized asset componentization and other adjustments needed for its regulated accounting. As a result, during 2018, Drainage found that actual depreciation rates, averaging 1.5%, were slightly higher than the average budget rate of 1.4%, resulting in higher-than-budgeted deprecation expense in 2018. The revised rates are reflected in the budget amounts for 2020 and future years.

4.3.5 Rate Base

Drainage's mid-year rate base, shown in Table 4.3.5 below, is $8.0 million less than forecast. This difference is almost entirely due to the changes in the capital program discussed in in Section 4.4.1. These changes have resulted in lower capital additions in 2018 and 2019, and much higher capital additions in 2020, due to reprioritization of capital projects to address urgent needs for emergency repairs and asset rehabilitation, consolidation of flood mitigation under SIRP and work on approved NRA programs (CORe and LRT Relocations).

Table 4.3.5
Mid-Year Rate Base
($ millions)

		A	B
Mid-Year Rate Base		**2020**	
		Budget	**Actual**
1	Plant in Service		
2	Balance, beginning of year	4,912.7	5,010.1
3	Additions - EPCOR-funded	144.1	211.9
4	Additions - Contributed	131.1	151.9
5	Retirements and adjustments	(12.8)	(7.1)
6	Balance, end of year	5,175.1	5,366.8
7	Mid-Year Plant in service	5,043.9	5,188.4
8	Accumulated Depreciation		
9	Balance, beginning of year	990.2	987.9

	Mid-Year Rate Base	A	B
		2020	
		Budget	Actual
10	Depreciation expense	76.6	78.7
11	Retirements and adjustments	(12.8)	(7.0)
12	Balance, end of year	1,054.0	1,059.6
13	Mid-Year Accumulated Depreciation	1,022.1	1,023.8
14	Other Rate Base Items		
15	Working Capital	15.7	15.8
16	Materials and Supplies	1.5	1.5
17	Other Rate Base Items	17.2	17.3
18	**Gross Mid-Year Rate Base**	**4,039.0**	**4,182.0**
29	Contributions		
20	Balance, beginning of year	(3,142.9)	(3,289.2)
21	Contributions in aid of construction	(131.1)	(151.9)
22	Balance, end of year	(3,274.1)	(3,441.1)
23	Mid-Year Contributions	(3,208.5)	(3,365.2)
24	Accumulated Amortization		
25	Balance, beginning of year	(532.8)	(537.0)
26	Amortization of contributions	(41.3)	(42.5)
27	Balance, end of year	(574.1)	(579.6)
28	Mid-Year Accumulated Amortization	(553.5)	(558.3)
39	**Mid-Year Contributions**	**(2,655.1)**	**(2,806.9)**
30	**Net Mid-Year Rate Base**	**1,383.9**	**1,375.2**

Even with significant changes to the capital program, in 2020, the mid-year rate base is less than 1% less than budget. Contributed assets continue to affect both the gross rate base and mid-year contributions. As noted in prior years', the value of contributed assets is difficult to forecast since developers are responsible for construction of distribution infrastructure in new subdivisions and the pace of construction can vary significantly. As well, EWSI receives contribution funding from the Sanitary Servicing Strategy Fund (SSSF) to support drainage development throughout the City of Edmonton. The amount of SSSF funding also varies significantly in response to the level of developer activity on SSSF-eligible projects.

4.3.6 Return on Rate Base

In 2020, Drainage's total return on rate base is $0.8 million greater than budget ($4.2 million less for 2018-2020). Although the total return on the rate base is close to budget, debt returns are lower than budget and equity returns are higher. In 2019 and 2020, EUI provided one-time preferential financing to Drainage in the form of short term notes at rates of 2.31% and 1.75%, respectively. This debt, which will be rolled over to higher cost debt prior in 2021 and 2022, reduces the average cost of debt by 1.13% in 2020 and 0.61% over the 2018-2020 period. The low cost of debt has enabled Drainage to earn equity returns in 2020 in excess of its budgeted returns. Even so, since Drainage's rates of return on equity are much lower than the returns approved for Water and Wastewater Treatment, the 2022-2024 PBR application proposes to ramp-up Drainage's rate of return on equity to comparable rates over a five year period commending in 2022.

Table 4.3.6-1
Return on Mid-Year Rate Base
($ millions)

		A	B	C	D
	Return on Rate Base	**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	Net Mid-Year Rate Base	1,383.9	1,375.2		
2	Capital Structure				
3	Debt	57.50%	55.53%		
4	Equity	42.50%	44.47%		
5	Total	100.00%	100.00%		
6	Cost Rates				
7	Debt	4.16%	3.03%	3.91%	3.30%
8	Equity	3.25%	4.95%	4.46%	5.03%
9	Weighted Average Cost of Capital (WACC)	3.77%	3.88%	4.16%	4.13%
10	Return on Rate Base				
11	Debt	33.1	23.1	82.4	64.9
12	Equity	19.1	30.3	76.7	89.9
13	**Total Return on Drainage Rate Base**	**52.2**	**53.4**	**159.1**	**154.8**

Returns on rate base are calculated separately for the debt-financed and equity-financed portions of Drainage's net rate base. The rate of return on debt for 2020 and 2018-2020 reflects the "rollover" of City of Edmonton debentures into EUI notes with the same terms and conditions, as well as the preferential financing on short-term notes issued to EUI in 2019 and 2020. The calculation of the average cost of debt is shown in Table 4.3.6-2 below.

Table 4.3.6-2
Interest Expense and Cost of Debt
($ millions)

		A	B	C	D
	Interest Expense and Cost of Debt	**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	Interest expense				
2	Interest on short-term debt	1.3	1.5	5.2	3.6
3	Interest on City of Edmonton debentures	18.0	-	39.1	18.1
4	Interest on intercompany debentures	7.1	22.1	26.0	43.9
5	**Total interest expense**	**26.4**	**23.5**	**70.2**	**65.7**
6	Mid-year debt				
7	Mid-Year Short-term debt	34.6	47.2		
8	Mid-Year Long-term debt	599.3	731.0		
9	Total mid-year debt	633.9	778.2		
10	**Average Cost of Debt**	**4.16%**	**3.03%**	**3.91%**	**3.30%**

4.3.7 Transactions with Affiliates

Drainage derives a portion of its revenues and expenses from transactions with affiliates, including the City of Edmonton, EUI and its subsidiaries. Table 4.3.7 provides a summary of Drainage's 2020 and 2018-2020 transactions with affiliates.

Table 4.3.7
Transactions with Affiliates
($ millions)

		A	B	C	D
	Affiliate and Service	**2020**		**2018-2020**	
		Budget	**Actual**	**Budget**	**Actual**
1	**Revenues from the provision of services to the City of Edmonton**				
2	Utility Services	2.9	2.9	8.7	5.8
3	Other Revenue	0.9	0.1	2.7	3.5
4	Total	3.8	2.9	11.4	9.3
5	**Services provided by (recovered from):**				
6	**City of Edmonton**				
7	Franchise Fees	9.5	9.7	29.1	27.9
8	Property Taxes	1.1	0.9	2.1	2.6
9	Interest on City of Edmonton debentures	18.0	-	39.1	18.1
10	Other services	7.8	5.0	23.5	25.0
11	Total	36.4	15.6	93.7	73.6
12	**EPCOR Utilities Inc.**				
13	Corporate Shared Service Costs	16.9	17.7	49.5	51.3
14	Interest on short-term debt	7.1	22.1	26.0	43.9
15	Interest on intercompany debentures	1.3	1.5	5.2	3.7
16	Total	25.3	41.2	80.7	98.9
17	**Other Affiliates**				
18	EPCOR Energy Alberta LP	3.9	4.9	11.7	13.2
19	EPCOR Distribution and Transmission Inc.	0.9	-	2.7	0.9
20	EPCOR Technologies Inc.	-	-	-	(0.2)
21	EPCOR Commercial Services Inc.	-	-	-	0.7
22	Other EWSI Business Units	2.0	1.6	6.0	6.6
23	Total	6.8	6.6	20.4	21.1
24	**Expenditures (Contributions) on capital projects arising from services provided by:**				
25	City of Edmonton	(43.1)	(23.4)	(119.2)	(60.3)
26	EPCOR Technologies Inc.	-	5.2	-	12.6
27	EPCOR Utilities Inc.	2.3	1.3	5.2	4.2
28	EPCOR Energy Services	(2.2)	(2.7)	(7.6)	(8.1)
29	EPCOR Distribution and Transmission Inc.	-	0.0	-	0.4
30	EPCOR Water Services Inc.	0.2	0.3	0.6	0.7
31	Total	(42.9)	(19.2)	(121.1)	(50.4)

4.4 Capital Programs

4.4.1 Capital Expenditures

Drainage's forecast capital program is based on the 2018-2021 long term plan (LTP) included in Grant Thornton report CR_8300, an independent third party report assessing the transition of Drainage from the City of Edmonton to EPCOR. Drainage's 2020 capital expenditures program is summarized in Table 4.4.1 below. Table 4.4.1 provides a comparison of forecast to actual capital expenditures for 2020 and 2018 to 2020 for each program and for each project with capital expenditures in excess of $10.0 million over the 2018-2021 term, as well as a comparison of total forecast capital expenditures for 2018 to 2021 from the LTP, adjusted for approved Non-Routine Adjustments, to EWSI's current capital projection.

Please note that forecast capital expenditures also include capital expenditures approved for Non-routine Adjustments.

Table 4.4.1
Capital Expenditures and Contributions
($ millions)

	A	B	C	D	E	F	G	H	I	
	2020			2018-2020			2018 - 2021			
Project Description	Forecast	Actual	Difference	Forecast	Actual	Difference	LTP	Projection	Difference	Note
Capital Expenditures										
Drainage Neighbourhood Renewal	43.8	36.6	(7.2)	124.1	87.2	(36.9)	175.8	123.0	(52.8)	1
Drainage System Expansion	20.4	24.9	4.6	57.3	67.8	10.5	84.2	93.1	8.9	2(a)
Drainage System Rehabilitation										
Groat Rd Trunk S OP-001639-01	-	13.2	13.2	-	34.5	34.5	-	34.5	34.5	3(a)
High Priority Replacement Program	13.7	18.6	4.9	40.0	53.0	13.0	54.2	70.6	16.5	3(b)
Projects under $15 million	16.5	34.1	17.6	48.0	84.2	36.1	65.0	115.4	50.3	3(c)
Drainage System Rehabilitation	30.2	65.9	35.7	88.1	171.7	83.6	119.2	220.5	101.3	
Environmental Quality Enhancement										
Kinnard OSS	-	2.3	2.3	-	2.5	2.5	-	12.7	12.7	
Projects under $15 million	33.7	14.7	(19.0)	74.7	26.1	(48.6)	100.8	33.1	(67.7)	
Environmental Quality Enhance	33.7	17.0	(16.7)	74.7	28.6	(46.1)	100.8	45.8	(55.0)	4
Flood Mitigation										
Tweddle Place OP-001334-01	9.1	5.4	(3.7)	29.6	14.5	(15.1)	29.6	20.5	(9.1)	5(b)
Malcolm Twed & Ed OP-001695-01	17.5	2.2	(15.3)	48.6	4.0	(44.7)	58.4	9.5	(48.9)	5(a)
Kenilworth Dry Pond	-	0.5	0.5	-	0.6	0.6	-	6.4	6.4	5(b)
Lauderdale West Dry Pond	-	-	-	-	-	-	-	0.8	0.8	5(b)
Projects under $15 million	40.8	25.5	(15.3)	108.7	43.3	(65.4)	159.5	71.7	(87.8)	5(b)
Flood Mitigation	67.5	33.7	(33.8)	186.9	62.4	(124.5)	247.5	108.9	(138.6)	
SSSF Projects										
SESS SW4 OP-001336-01	-	5.4	5.4	-	17.6	17.6	-	20.6	20.6	
NEST NC2 & NC3 OP-001795-01	-	5.8	5.8	-	23.6	23.6	-	32.6	32.6	
SESS SA10A CP-002993-01	-	15.4	15.4	-	28.6	28.6	-	38.5	38.5	
SW5	-	0.3	0.3	-	0.3	0.3	-	4.5	4.5	
Projects under $15 million	43.3	0.8	(42.5)	102.9	3.1	(99.8)	137.8	4.8	(133.0)	
SSSF Projects	43.3	27.8	(15.5)	102.9	73.2	(29.7)	137.8	101.0	(36.8)	6
NRA - LRT										
West Valley LRT	11.8	10.6	(1.2)	13.9	16.4	2.4	55.4	48.4	(7.1)	
Metro LRT	4.8	7.1	2.4	4.8	7.3	2.5	5.5	8.7	3.2	
NRA-LRT Projects	16.5	17.7	1.2	18.7	23.7	5.0	60.9	57.0	(3.8)	7
NRA - CORe										
151S/99A SanTrunk OP-001940-01	-	7.6	7.6	-	8.7	8.7	-	24.6	24.6	
Duggan Tunnel Replacement	1.0	0.8	(0.2)	2.1	0.8	(1.3)	10.4	5.2	(5.1)	
Mill Creek Combined	-	0.7	0.7	-	0.7	0.7	-	1.4	1.4	
Projects under $15 million	14.6	21.7	7.1	19.6	29.2	9.7	41.9	64.3	22.4	

	A	B	C	D	E	F	G	H	I	
	2020			2018-2020			2018 - 2021			
Project Description	Forecast	Actual	Difference	Forecast	Actual	Difference	LTP	Projection	Difference	Note
36 NRA - CORe	15.6	30.7	15.1	21.7	39.4	17.8	52.2	95.5	43.2	8
37 Real Estate	-	18.8	18.8	-	18.8	18.8		32.8	32.8	9
38 Total Capital Expenditures	**238.9**	**273.1**	**34.3**	**633.9**	**572.7**	**(61.2)**	**865.4**	**877.6**	**12.2**	
39 **Contributions**										
40 Drainage System Expansion	(12.2)	(4.0)	8.2	(43.9)	(16.3)	27.5	(60.1)	(21.6)	38.5	2(b)
41 Flood Mitigation										
42 Malcolm Twed & Ed OP-001695-01	-	(1.8)	(1.8)	-	(1.8)	(1.8)	-	(3.0)	(3.0)	
43 Projects under $15 million	-	(5.0)	(5.0)	-	(5.0)	(5.0)	-	(11.5)	(11.5)	
44 Flood Mitigation	-	(6.8)	(6.8)	-	(6.8)	(6.8)	-	(14.5)	(14.5)	5(c)
45 SSSF										
46 SESS SW4 OP-001336-01	-	(5.4)	(5.4)	-	(17.6)	(17.6)	-	(20.6)	(20.6)	
47 NEST NC2 & NC3 OP-001795-01	-	(5.8)	(5.8)	-	(23.6)	(23.6)	-	(32.6)	(32.6)	
48 SESS SA10A CP-002993-01	-	(15.4)	(15.4)	-	(28.7)	(28.7)	-	(38.5)	(38.5)	
49 SW5	-	(0.3)	(0.3)	-	(0.3)	(0.3)	-	(4.5)	(4.5)	
50 Projects under $15 million	(43.3)	0.7	44.0	(102.9)	2.6	105.5	(137.8)	2.3	140.1	
51 SSSF Projects	(43.3)	(26.2)	17.0	(102.9)	(67.7)	35.2	(137.8)	(94.0)	43.9	6
52 Total Contributions	**(55.4)**	**(37.0)**	**18.4**	**(146.8)**	**(90.8)**	**55.9**	**(197.9)**	**(130.1)**	**67.8**	
53 Capital Expenditures, Net	**215.5**	**236.1**	**20.6**	**527.5**	**481.9**	**(45.6)**	**780.6**	**747.5**	**(33.1)**	

Table 4.4.1 shows that despite the challenges posed by the COVID-19 pandemic, Drainage undertook an extensive capital program in 2020. Both actual and projected expenditures differ significantly from the LTP as Drainage (1) focused its resources on addressing critical needs for drainage system rehabilitation that had not been identified in the LTP; (2) re-evaluated flood mitigation projects in line with SIRP strategy; and (3) undertook capital projects to address needs identified in Non-Routine Adjustments approved for CORe and LRT relocations.

Explanations for significant differences between the LTP and Drainage's current projections for 2018 to 2021 are as follows:

1. **Drainage Neighbourhood Renewal** –2018-2021 - $52.8 million less than LTP. This category includes the costs of neighbourhood drainage asset renewals and is aligned with the timing of the City of Edmonton's Building Great Neighbourhoods program. The underspend compared to the LTP reflects a reduction in sewer upgrading costs based on reprioritization to more efficiently complete this work by including it into individual neighbourhood renewal projects where required or by using lower cost SIRP Strategy options such as capturing peak stormwater volumes at the source by using green infrastructure (LID and dry ponds) or by proactive relining of pipes and manholes to reduce inflow and infiltration.

2. **Drainage System Expansion, net of contributions** – 2018-2021 - $47.4 million greater than LTP.

    a. Capital expenditures –2018-2021- $8.9 million greater than LTP plan. Increases in 2018-2021 projected expenditures in this partially-contributed program are primarily due to higher service connection costs reflecting increases in non-standard connections and capitalization of the costs of private development construction project services provided by City of Edmonton staff.

    b. Contributions – 2018-2022 - $38.5 million less than LTP. These decreases are primarily attributable to the removal of contributions from local improvement fees following the Drainage transfer.

3. **Drainage System Rehabilitation Projects** – 2018-2020 - $101.3 million greater than LTP.

    a. **Groat Road Storm Trunk Rehabilitation** – 2018-2021 – $34.5 million greater than LTP. This project, completed in 2020, was originally planned to be complete prior to Drainage transfer but due to project complexity, design took longer than expected.

    b. **High Priority Replacement Program** – 2018-2021 - $16.5 million greater than LTP. The additional costs in this program result from asset inspections, which identified higher than anticipated volumes of assets meeting criteria for high priority replacement.

    c. **Drainage System Rehabilitation Projects < $15 Million** – 2018-2021 - $50.3 million greater than LTP. Increases in the costs of these projects are primarily due to the large number of emergency projects requiring immediate rehabilitation. This also reflects the increased need for rehabilitation of aging drainage infrastructure resulting in increased scope on the local sewer

rehabilitation program to include catch basin leads and service connections as well as the new manhole catch basin program and proactive service relining project.

4. **Environmental Quality Enhancement** – 2018-2021 - $55 million less than LTP. This category includes projects that mitigate the impacts of the drainage system on the environment, including sewer overflows, river loading, and reuse of biosolids. Actual and projected expenditures in this category have been reduced significantly due to the cancellation of the River for Life, Mill Creek End of Pipe Facility and Enhanced Biosolids projects as part of the re-prioritization of environmental projects within the SIRP strategy. The SIRP strategy has incorporated these environmental quality objectives.

5. **Flood Mitigation, net of contributions** – 2018-2021 - $153.1 million less than LTP.

    a. **Malcolm Tweddle and Edith Rogers Dry Ponds** – 2018-2021 - $48.9 million less than LTP. Expenditures on this multi-year project have been deferred first due to delays in finalizing land agreement in 2019, then from weather-related pauses in construction in both 2019 and 2020 and delays on the City's LRT construction which impacted sewer installations

    b. **Other Flood Mitigation Projects** – $89.7 million less than LTP. This category includes development of drainage infrastructure and program improvements to decrease flood risks. As described in Section 1.5, Drainage has consolidated management of flood mitigation projects under SIRP. The projected underspend is consistent with 2018 and 2019 reporting and reflects re-evaluation of flood projects in line with the SIRP strategy combined with delays in land acquisition in accordance with the City of Edmonton’s new City consultative process.

    c. **Flood Mitigation Contributions** – 2018-2021 - $14.5 million greater than LTP. These contributions represent provincial and federal grant funding in respect of flood mitigation projects. Separate presentation of these contributions, rather than netting the grants against the related project reflects a change in the treatment of grant recoveries following the transfer of dry pond structure ownership to Drainage.

6. **Sanitary Servicing Strategy Fund (SSSF) Projects, net of contributions** - $7.0 million greater than LTP. The SSSF provides for developer financing of major sanitary trunk construction to service new development areas. Drainage works with the SSSF Management Committee to coordinate design, construction, schedules and budgets for various projects. While significantly less than the City LTP amounts, Drainage’s current projected expenditures, align with the SSSF Management Committee’s five year construction plan (2018-2022) to support orderly, cost-effective development. The major projects in this category fully funded through the SSSF. The unfunded amounts represent EWSI’s annual contributions to the SSSF.

7. **NRA-LRT Relocations** – 2018-2021 - $3.8 million less than NRA approval. Projected capital expenditures for these projects represent EWSI’s current estimates of capital required in the 2018-2021 PBR term for NRAs approved by City Council. Projected capital expenditures for 2018-2021 are less than the amount approved by City Council, primarily due to rescheduling to align with the latest City plans on the West Valley LRT.

8. **NRA-CORe** – 2018-2021 – $43.2 million greater than NRA approval. Actual and forecast costs for these programs represent EWSI's current estimates of capital required in the 2018-2021 PBR term for NRAs approved by City Council. Projected capital expenditures of $95.5 million are $43.3 million greater than the $52.2 approved by City Council for 2018-2021. This increase is primarily due to inclusion of the large trunk program in CORe which was previously included under Drainage System Rehabilitation. The rehabilitation of large sanitary trunks are needed to address corrosion and odour issues.

9. **Real Estate Consolidation Project** (new project) - 2018-2021 - $32.8 million. Following the transfer of Drainage to EPCOR, an EPCOR-wide real estate review was undertaken to identify and evaluate alternatives for consolidating Water Distribution and Transmission and Drainage's operations and maximize the contribution to the cost reduction and efficiency commitments made as part for the Drainage transfer. This project consolidates the many physical locations occupied by Water and Drainage and will provide operational cost-savings which are reflected in the 2022-2024 PBR. Projected expenditures are supported by a comprehensive business case submitted with Drainage's 2022-2024 PBR Application.

4.4.2 Construction Work in Progress

Drainage's rate base consists of plant in service. If a capital project is not completed (i.e. not placed into service) in the year, the capital expenditures on that project remain in Construction Work in Progress and are excluded from the rate base. Because of the long time frames required to complete large, complex projects, Drainage has larger balances of Construction Work in Progress than Water or Wastewater. Drainage's construction work in progress is summarized in Table 4.4.2 below:

Table 4.4.2
Construction Work in Progress
($ millions)

		A	B
Construction Work in Progress		**2020**	
		Budget	**Actual**
1	Balance, beginning of year	66.2	46.9
2	Capital expenditures	236.1	237.5
3	Cancelled costs/Write-offs	-	(1.4)
4	Capital additions	(144.1)	(212.0)
5	**Balance, end of year**	**145.9**	**71.0**

The PBR allows Drainage to capitalize the costs of financing certain projects remaining in Construction Work in Progress, using an allowance for funds utilized during construction (AFUDC). In 2020, AFUDC included in capital expenditures on eligible projects amounted to $3.0 million ($2.1 million in 2019 and $1.7 million in 2018).

4.5 Operational Performance

On February 19, 2020, City Council approved amendments to Bylaw 18100. These amendments provide for the introduction of new PBR performance metrics, scoring and penalties beginning in 2020. The new

proposed PBR metrics program is effective for the remainder of the PBR term (2020 and 2021), and is patterned after the water and wastewater PBR metrics and meets the requirements of the Letter of Intent developed for the transition of Drainage Services from the City to EPCOR.

4.5.1 Environmental Index

The environmental index measures the success of Drainage's programs and policies designed to mitigate and report adverse environmental impacts.

Index Component		PBR Performance Measure	Standard	Actual Score	Index
1	Stormwater Flow and Flow Monitoring	The percentage of storm drainage area monitored.	>63.0%	65.3%	1.037
2	Environment Incident Management	The actual number of reportable environmental incidents.	<50	34	1.471
3	Green Hectares	Number of hectares with runoff managed by green infrastructure.	>22.0	18.0	0.817
				Average Index	1.108
				Index Standard Points	30.0
				Total Actual Points	33.2
				Maximum Available Including Bonus Points	33.0
				Total Points Earned	**33.0**

2020 Highlights:

- **Stormwater Flow and Flow Monitoring**
  - Completed design of six new permanent outfall monitoring stations for construction in 2021
- **Environment Incident Management**
  - Achieved a 30% reduction in reportable incidents through organizational improvements, including assigning responsibility for investigating and identifying third party generators of spills and releases to Drainage's Monitoring and Compliance team.
  - Recovered over $39 thousand from customers following implementation of a new third party cost recovery process for spills and releases.

2021 Areas for Improvement

- **Green Hectares**
  - In 2020, Drainage developed new design and construction standards for Low Impact Development projects and completed LID and small storage projects on public property in four neighbourhoods and along Jasper Avenue. Achieving performance standards will require implementation of LIDs on private lands, as well as on public property. To this end, Drainage has developed a Master Servicing Agreement for LID design and is working with the City of Edmonton and local businesses to expedite LID facility design and construction in 2021. Drainage has also established a partnership with University of Alberta to construct LID facilities on University land.

4.5.2 Customer Service Index

The Customer Service Index is a composite measure of the customers' perception of satisfaction with EWSI service, the speed of response and quality service level to customer issues.

Index Component		PBR Performance Measure	Standard	Actual Score	Index
1	Service Maintenance Calls	The percentage of service maintenance calls resolved within 24 hours.	>80.0%	97.2%	1.215
2	Emergency Dig Ups - Service Restored	The percentage emergency dig ups services resorted within 48 hours from time received from operations.	>98.0%	95.8%	0.978
3	Service Connections	The percentage of service connection meeting the 6 week target.	>85.0%	71.7%	0.844
4	Sewer Odour Hotspots	The percentage of the city area with odour hotspots.	<16.7%	13.5%	1.234
				Average Index	1.038
				Index Standard Points	20.0
				Total Actual Points	21.4
				Maximum Available Including Bonus Points	22.0
				Total Points Earned	**21.4**

2020 Highlights:

- **Service Maintenance Calls**
  - Despite the challenges of performing work in private residences during the COVID-19 pandemic, Drainage's achieved better than standard performance, primarily due to process improvements including enhanced customer screening, and training to ensure the continued safe delivery of services.
- **Sewer Odour Hotspots**
  - Air monitoring was completed at 56 sewer locations across the city. This effort has provided a comprehensive understanding of odour in the sewer system and has guided the development of the permanent monitoring plan.
  - Manhole sealing and sewer ventilation controls were successfully installed in key intersections of the Duggan and Steinhauer communities to limit sewer odour at historically high complaint locations.
  - Twelve access manholes were built in the communities of West Jasper Place, Strathcona and Brookside, allowing for the inspection and identification of odour sources in several deep trunks for the first time.

2021 Areas for Improvement

- **Service Maintenance Calls**
  - Additional technical training, customer service training, and specialized equipment will be provided to Service Maintenance crews, so that crews will be able to perform all required work during the initial call to the customer's property, reducing rework and customer inconvenience. .
- **Emergency Dig Ups – Service Restored**
  - Although the standard was not met, in 2020, the average restoration time for the 45 of 47 services restored within the 48 hour performance standard was 14 hours and the average restoration time for all 47 services was 21 hours.
  - Fro 2021, Drainage is continuing to work towards achieving performance targets. Average service reconnection time to April 30 is 11 hours.
- **Service Connections**
  - In 2020, Drainage completed new service installations at 228 locations with over 450 actual new services installed.
  - For 2021, Drainage will be implementing process improvements to meet or exceed service connection targets. These improvement will incorporate the review and updating customer application guidelines to address constructability, operational and safety issues, as well as concerns identified through forums with developer representative groups.
- **Sewer Odour Hotspots**
  - Drainage is continuing to implement its CORe strategy. In 2021, Drainage will install sixteen permanent air monitoring sites at locations across the city with a history of high public odour complaints. These sites will be integrated with SIRP Dashboard to allow planners and operators to see odour conditions in real time, both to pre-emptively manage odour issues in high impact areas, and that the evaluate the effectiveness of mitigation activities.
  - In 2021, the CORe program will also include: capital upgrades at six pump stations to decrease the generation of hydrogen sulfide from those facilities and reduce odour in their downstream communities; construction of o sewer modifications in Allendale to reduce the presence of odour in the community; and deep trunk inspections and cleaning.

4.5.3 Reliability and Optimization Index

The System Reliability Index is a measure of the confidence that customer can place in the reliability of the drainage sanitary and stormwater systems.

Index Component		PBR Performance Measure	Standard	Actual Score	Index
1	Blocked Sewers	The number of blocked sewers per 100km of sanitary/combined pipe.	<2.10	2.51	0.838
2	Sewer Renewal	The km of sewers renewed / relined.	>60.0	75.3	1.255
3	Infrastructure Condition Rating – Min Level	The percentage of all infrastructure (including non-linear) assessed at or above the minimum level of condition rating.	>90.0%	90.6%	1.007
4	Full Property Flood Proofing Inspections	The number of inspections completed.	>750	573	0.764
				Average Index	0.966
				Index Standard Points	35.0
				Total Actual Points	33.8
				Maximum Available Including Bonus Points	38.5
				Total Points Earned	**33.8**

2020 Highlights:

- **Sewer Renewal**
  - The total length of local sewers under 750 mm in diameter that were proactively renewed was well in excess of the performance target, allowing Drainage to start to reduce its maintenance backlog.
- **Infrastructure Condition Rating**
  - Better than standard performance reflects rehabilitation, replacement and new construction to improve overall system condition. The increase in the Drainage System Rehabilitation program and continued investment in higher value, critical assets, such as large trunks, is expected to contribute to overall ratings improvement in 2021.

2021 Areas for Improvement

- **Blocked Sewers**
  - The number of plugged mains increased significantly due to the “toilet paper shortage” in the early part of the pandemic and the resulting increase in prohibited waste (paper towel/ flushable wipes). In 2021, Drainage will undertake a customer education campaign targeted at preventing prohibited waste from entering the sewerage system and will also conduct a thorough review of the high pressure flushing program to identify improvement opportunities.
- **Full Property Flood Proofing Inspections**
  - Flood proofing inspections were suspended between March and the latter half of 2020 due to provincial pandemic restrictions. During the downtime, all technical staff successfully completed the advanced flood prevention training program offered by Fleming College and University of

Waterloo. After restrictions were eased, interior inspections could only be completed safely through the use of video calls.

- In 2021, Drainage will (1) hire three additional Flood Prevention Advisors, (2) develop and implement approaches for focused property level flood prevention efforts in high-risk basins, and (3) develop and implement a flood prevention inspection program for commercial customers.

4.5.4 Safety Index

The Safety Index is a measure of the success of programs and the application of policies that maximizes the safety of employees and the public.

Index Component		PBR Performance Measure	Standard	Actual Score	Index
1	Near Miss Reporting Factor	The number of near miss reports entered in the ESS system.	>750	1,608	2.144
2	Work Site Inspection Factor	Number of Work Site Inspections and observations completed per year.	>1,300	1,461	1.124
3	Lost Time Frequency Rate	The actual lost time frequency rate.	<0.75	0.17	4.371
4	All Injury Frequency Rate	The actual all injury frequency rate	<4.00	2.23	1.793
				Average Index	2.358
				Index Standard Points	15.0
				Total Actual Points	33.4
				Maximum Available Including Bonus Points	16.5
				Total Points Earned	**16.5**

2020 Highlights:

- **Near Miss Reporting Factor**
  - Ongoing communication of importance of reporting near misses by management and leadership allowed Drainage to significantly exceed it performance targets. In 2021, Drainage will continue to report near misses in its monthly newsletter and will highlight near misses that resulted in improvements to workplace health and safety.
- **Work Site Inspections Factor**
  - Similar to near miss reporting, leadership provides on-going communication of the importance of completing inspections to Drainage personnel. Worksite inspection reports are reviewed by leadership on a monthly basis.
  - In 2021, Drainage will implement a new inspection module for all employees to facilitate conducting and reporting inspections in real time in the field.

- **Lost Time Frequency Rate**
  - Drainage used the Modified Work Program and developed an Injury Management Procedure document to assist frontline foremen and managers to allow injured employees to work in a modified capacity, rather than to be off work.
  - In 2021, Drainage will continue to investigate injuries to determine root causes and to develop corrective actions to prevent recurrences.
- **All Injury Frequency**
  - Similar to the Lost Time Frequency metric, in 2021, Drainage will continue to investigate injuries to determine root causes and to develop corrective actions to prevent recurrences.

4.6 Rates and Bill Comparisons

Unlike most cities, where wastewater treatment services and drainage services are combined, EWSI currently has separate bills for wastewater treatment services and for drainage services. Accordingly, in order to provide a better basis for comparison with other cities and communities, bill comparisons in Section 3.6 utilize EWSI's blended wastewater treatment and drainage bills.

5 2020 Annual Operating Plans

Water Services presented the 2020 Annual Operational plan to Utility Committee on February 14, 2020. The purpose of that document was to provide Edmonton City Council, Utility Committee and stakeholders a high level perspective of the major activities and initiatives that Water Services was undertaking. Unlike earlier plans, the 2020 Plan recognized the significant number of initiatives are were either underway or had been identified that were common to both the water and drainage business units. These initiatives were intended to drive synergies and efficiencies and to align the two businesses operationally. As a result, the plan was structured in three major sections: 1) Common Initiatives that are being pursued by Water Services and Drainage Services together, 2) Water Services' specific initiatives and 3) Drainage Services' specific initiatives.

In all three areas, initiatives planned for 2020 were organized within six strategic focus areas:

1. Customer Service
2. Public Health and the Environment
3. Employee and Public Safety
4. Employee Development
5. Operational Performance
6. Growth and Financial Performance

This PBR Progress Report provides an update on the 2020 Operational Plan. All initiatives have been described as either: 1) Completed, indicating that the activities are finished and the initiative is closed, 2) In-progress, indicating that work continues and the initiatives has been continued in the 2021 Operational Plan (as many initiatives are multi–year), or 3) On-going, indicating that the initiatives will never be formally completed as business requirements continue to change (e.g. operational improvement). A large number of initiatives planned for 2020 were delayed from the original timelines due to the impact of the COVID pandemic. This has resulted in many continuing in 2021 and are therefore designated as on-going in the charts below.

5.1 Water and Drainage Services – Common Initiatives

INITIATIVE	Year End Status
Customer Service	
Improve customer service The 2nd and 3rd phases of the project will be to do an assessment of the rest of EPCOR's customer facing groups and assessment of how EPCOR's website can be optimized for a customer perspective. In 2020, Water D&T will cross train and amalgamate existing water customer service groups. The other primary focus in 2020 is implementing EPCOR's new	**On-going** – In 2020, a new billing system was implemented. This entailed significant training of staff to ensure that new processes and procedures were well understood and customer service would not be impacted by the transition. The next phase of the project will be to do a comparison between how customer service is measured across EPCOR to current practice in EWSI and an assessment of how EPCOR's

INITIATIVE	Year End Status
billing system and ensuring staff are trained and able to provide a positive customer experience.	website can be further optimized from a customer perspective.
Review developer funding mechanisms to align approaches across all business units Capital investments required to support new development across the city are allocated between developers and ratepayers differently across EPCOR's various lines of business. EWSI is drafting a white paper to establish cost minimization, cost allocation and regulatory principles to be applied in its approach to funding water and drainage infrastructure required to support growth.	**In-progress** – EWSI continued to hold meetings with UDI to develop a principles based approach. The current focus is modelling the impact of applying common principles consistently across all three utilities. The final proposed approach will be presented to Utility Committee as per their request.
Public Health and the Environment	
Develop a Proactive Residuals Strategy – Develop a strategy for the continued reduction of residuals loading to the North Saskatchewan River. This strategy will revisit options for the potential diversion of water treatment plants residuals to sanitary sewer, landfill or other solids disposal and will explore opportunities to further reduce solids loading to the river and expanding water plants residual solids management to other seasons. EWSI will study the net environmental benefit of various options.	**In-progress** – In 2020, a Sustainable Return-On-Investment (SROI) study was completed with multiple stakeholders, including AEP, the CoE and the NSWA. The SROI study examined options for construction of facilities at the water treatment plant that would treat the residuals on site and divert to dewatered residuals to landfill for disposal. Based on a Triple Bottom (TBL) assessment, EWSI has concluded that the costs (financial, environmental and social) of on-site treatment strategies far outweigh the environmental benefits. The SROI study also revealed that information on the environmental impact of the discharges on the river was incomplete. EWSI's proposed residuals strategy for the next 10-year operating approval period is to conduct a more detailed evaluation of the residual discharges to fill in knowledge gaps.
Develop an integrated watershed management strategy for Edmonton - The objective of the IWM strategy is to manage total loadings to the NSR from all municipal discharges in Edmonton and to ensure drinking water security and source water protection for the Edmonton water supply in one unified watershed management program.	**In-progress –** In 2020, a joint Drainage and Water Canada committee and working group were established to explore, define and potentially implement opportunities in the development of an IWM. The committee produced a strategy document and detailed implementation plan at end of 2020. Activities in 2021 will focus on implementation of the plan.

INITIATIVE	Year End Status
Employee and Public Safety	
Develop and Implement Company-wide Assessments to review standard operating procedures for life saving rules, chemicals and high hazard activities.	**On-going** – the initial development has commenced with a focus on ensuring conformance to both EPCOR Standards and provincial legislative requirements. Future work will expand this foundation to the other rules. This initiative is being developed in conjunction with the competency program as described below. Additional modules will be develop over time.
Employee Development	
Develop and Implement Company-Wide Competency Based Training for All High Hazard Activities – Competency training will include fall protection, hazardous energy isolation, confined space and lifting devices.	**On-going** – initial work has commenced on the identified modules. This approach will establish early learnings that will inform the subsequent development of additional modules over time.
Increase awareness of employee growth opportunities through career fairs and other mechanisms - EPCOR intends to leverage relief postings for succession planning, cross functional skill development and knowledge development for in-scope positions. This gives staff the opportunity to take on new roles, demonstrate their ability, diversify their experience, and develop their career. Another objective is to identify immediate knowledge transfer needs and document practices for knowledge transfer.	**On-going –** "A Day in the Life Of" documents were created to give a realistic job preview as well as outline what type of knowledge, skills and education would be required to be successful in various those roles across the company. The Human Resources team will develop company-wide behaviours/competencies for front line workers and evaluate the results of the pilot program and rollout professional growth for individual contributors company wide.
Improve Employee Engagement and Build a Respectful, Inclusive, Collaborative, Safe and Healthy Work Culture – Water Services will deliver a bi-annual engagement survey and interpret the results and implement action plans to address top drivers and opportunities for engagement. We will pursue a variety of activities through the Diversity Council including increasing awareness of diversity and inclusion at EPCOR, incorporating diversity into hiring practices, supporting employee resource groups and working with *Careers: The Next Generation* to provide work opportunities for indigenous youth.	**On-going** – In 2020, the Diversity Council, in concert with leaders across our Business Units, continued to foster a variety of activities and initiatives to drive this focus such as increasing awareness of diversity and inclusion at EPCOR and supporting employee resource groups. A number of Employee Resource Groups (ERGs) were formed. These are grass roots groups formed by employees that share a common diversity characteristic.

INITIATIVE	Year End Status
Develop and Implement a Company-Wide Employee Rotation Program – To ensure a strong pool of talent now and into the future, this program will identify suitable candidates for job-to-job or project-to-project opportunities and support all aspects of the transition.	**On-going** – In 2019, all managers completed the Professional Growth Initiative assessment and associated development plans. To date, the focus has been on people leaders and building a solid foundation in order to support our frontline employees and individual contributors with their professional development. 2020 focused on continued work on the development plans and the completion of the PGI assessments for new staff. Formal employee rotation slowed due to the challenges related to the COVID pandemic.
Operational Performance	
Develop a Process Improvement Program to Support Productivity Increases – This initiative will develop standardized processes or continuous improvement programs to support productivity increases and service quality improvements. The program will encompass methods, techniques and tools and be used to design, control and analyze both business and operational processes. It is critical that any approach chosen involves the people aspect of the process and integrates processes and systems.	**On-going** – a team with six sigma credentials has been formed with the intent of that group both conducting process improvement projects themselves as well as developing educational materials to foster a process improvement orientation across the organization. Several process improvement projects have been identified and are under development with a particular focus on the opportunities resulting from the move to the Aurum facility. An educational program is in the final stages of development.
Develop Standardized Project Management Office/Capital Project Management Tools – This initiative will standardized the way project managers plan, execute and monitor their projects and programs. It involves creation of a project management methodology along with several processes, tools and templates	**On-going** – a cross organizational team has been formed to review project management processes across all business units of EPCOR. The group has identified common process and re-developed many of the supporting documents. More detailed process modelling is currently underway as part of the introduction of the process into the respective business units.
Develop and Implement Strategies for Realizing Synergies between Water and Drainage – EPCOR has committed to a minimum of 1% annual operational efficiency savings for 2018-2022 and capital cost efficiencies of 10% by 2022 for Drainage Services. The initial focus of this initiative has been on integrating Drainage into EPCOR processes. Recent activities have focused on cross functional teams meeting to identify and	**On-going** – several short term opportunities for synergies have been identified and implemented. Detailed analysis has been completed to address larger opportunities to move towards a more consolidated approach across water and drainage. Central to this assessment is the planned consolidation of the drainage and water D&T teams at the new Aurum site. A number of specific opportunities related to that move were identified in 2020 and

INITIATIVE	Year End Status
prioritize efficiency opportunities in the areas of planning, capital and operations.	they are currently under development. These initiatives will be rolled–out over the next 1-3 years
Growth and Financial Performance	
One Water – Develop an integrated planning and implementation approach to manage finite water resources encompassing all the master plans and IRPs for all EWSI owned assets – Water and Wastewater utilities around the world are enhancing their strategic planning by moving to a "One Water" approach to managing the entire Water cycle in their community. The One Water approach has been defined as a holistic approach to sustainable water management that breaks down the traditional silos within the water utility sector and encourages collaboration between water utilities and other sectors.	**In-progress** – The One Water initiative started in 2020 with the formation of the One Water Planning group within EWSI, with the following seven focus areas have been prioritized. It is expected that 2021 will continue to focus on the first six priority items, with the final priority around water reuse moving forward on an opportunistic basis should a development require this focus in 2021. i) Consumption Patterns ii) SanIRP/ SSSF/ Future Wastewater Plants Expansions – iii) Growth Strategies for City and Region iv) Integrated Watershed Management Systems v) Climate Change vi) Water/Sanitary and Stormwater Reuse in Industrial Areas The end objective of One Water is to align the long range planning initiatives across all of the water related business units within EWSI and ensure that decisions are based on data that is consistent and validated within each of the individual IRP plans
Prepare for the 2022-2026 Edmonton PBR – The strategy will be developed to align Drainage under the same PBR Framework as Water and Gold Bar. EPCOR is proposing to renew the Water PBR rates for another five year term for the period 2022-2026. To stagger the future renewal periods, EPCOR will file the Gold Bar and Drainage PBR applications for a three-year term 2022-2024.	**On-going** – The majority of the application development was completed in 2020, with only final review planned for 2021 prior to submission to the City of Edmonton Three separate applications have been developed, one each for water, wastewater and drainage along with business cases for the majority of the capital spending. Common appendices are also included to address issues and requirements that cross all three utilities. Activities in 2021 will be focused on first, answering information requests from City Administration, City Council and external parties in order to provide additional clarity and background information where required. The

INITIATIVE	Year End Status
	approval process then culminates in a public hearing where Water Canada will defend the prudency of the application and seek formal approval from City Council.

5.2 Water Services

INITIATIVE	Year End Status
Customer Service	
Improve Development Processes and Coordination with City of Edmonton and UDI/IDEA – Water Services will focus on better coordination with City Roadways, LRT, Development and Planning group for greenfield and infill development work as well as local industry associations (UDI, IDEA).	**On-going** – Initiatives to improve coordination with the City continue through 2020. Examples include Roadways, LRT planning and infill development. New requirements will evolve as both organization introduce new processes. EWSI worked with the City and IDEA to develop the Infill Cost Sharing Program which was successfully piloted in 2020. Based on that success, the program is proposed to be expanded in the 2022-2026 Water PBR application.
Improve Operational Coordination with the Regional Water Customer Group (RWCG) – This initiative will improve communication, planning and coordination of operational activities and unplanned events to ensure an effective and coordinated response to planned or unplanned events.	**On-going** – Information such as reservoir levels, pressure data and other important operational information is now shared between the parties. Additionally, EWSI now regularly attends the RWCG Steering Committee to provide updates on major operational initiatives (e.g. Lead program). Additional work will continue to ensure on-going co-ordination of outages, repairs and other operational activities.
Sustain the Gold Bar Stakeholder Consultation Plan – Water Services will **continue** provide the public with balanced and objective information to assist with understanding the problem, alternatives, opportunities and/or solutions and to solicit feedback on Gold Bar's long-term requirements at its site in the river valley.	**On-going** – The Gold Bar Stakeholder consultation plan was developed and executed through 2019 and provides the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions. Shared outcomes and design principles were developed in collaboration with stakeholders that will drive and inform activities at the site. The on-going aspects of that stakeholder engagement program will build upon the success of the work

INITIATIVE	Year End Status
	done in 2019. Due to COVID, there was limited stakeholder engagement in 2020.
Develop a social media strategy for water main breaks	**In-progress** – To further improve outage communication, Water D&T commenced the review the process for updating the outage map on epcor.com. The intent is to update the map to provide more real time information to customers. Water D&T and PGA will also evaluate additional means to notify customers of unplanned outages and updates. This work was delayed from the original schedule and will continue into 2021.
Public Health and the Environment	
Develop Climate Change Adaptation – River Flooding Resiliency Plan – Climate Change Strategy identified flooding as the highest risk. Conduct flood hazard analysis and develop a flood mitigation plan for Gold Bar and implement flood mitigation measures at the water treatment plants.	**In-progress** – A comprehensive climate change strategy has been completed in 2018. In 2020, the strategy continued to be operationalized through a number of initiatives and capital plans for the facilities. As part of the PBR applications, plans were developed to mitigate flood risks at the plants. This work will continue in 2021 with the review of all risks associated with climate change on the Edmonton water and wastewater system operations and determine the appropriate risk ranking. Additionally, an outward looking document will be developed that can be shared with key stakeholders such as the City of Edmonton Council and Administration, Alberta Environment and Parks, and others who are interested in the EWS Climate Change Adaption Plan. It will be critical to ensure that the risks and the plans align with the City of Edmonton Climate Change Adaptation Plan that was finalized in 2018 and with EPCOR's overall Climate Change strategy and Environmental and Social Government reporting initiative.
Develop Drinking Water Emergency Plan (Troubled Waters) – Water Services will finalize plans for addressing drinking water emergencies and have in place a clear framework and a documented Business Continuity Plan (BCP) that addresses water supply or water quality emergencies.	**Complete** – EWSI finalized the BCP in 2019. In 2020, the focus was on sharing results with regional customers.

INITIATIVE	Year End Status
Execute the Lead Mitigation Strategy in Edmonton and roll out to other communities – Water Services will develop a proactive means of reducing public health risks to customers from lead and to ensure compliance with the new guidelines for lead in drinking water.	**In-progress** – Design of the orthophosphate dosing systems at Rossdale and E.L. Smith WTPs continued in 2020. Construction will be complete and addition of orthophosphate will begin in mid to late 2022. AEP provided formal approval to add orthophosphate to the Edmonton water in early 2020 after receiving an environmental impact assessment from EPCOR. Broader communication plans and messaging related to the implementation of orthophosphate for our customers, specifically: residential; institutional, commercial, and industrial (ICI), as well as the Regional Water Customer Group (RWCG) will happen in mid-2021. A long-term monitoring program starting in 2021 will be developed to optimize and ensure the effectiveness of orthophosphate dosing across Edmonton. After initial delays due to the impact of COVID-19 in early 2020, the program for full LSL replacements (from “main to meter”) started in mid-2020 for high priority LSLs and those LSLs associated with water main renewal projects. The target is to complete 85 high priority and 45 water main renewals full LSLs replacements in 2020. The goals for 2021 is to complete another 100 high priority LSLs, and the overall object is to eliminate the high priority LSLs by end of 2024.
Confirm to ISO 14001 Across All Water Services Sites – Environmental Management Systems (EMS) are required at facilities and treatment systems across Water Services. Those facilities/systems with an Environmental Management Systems built to meet the old standard are required to transition and conform to the new ISO 14001:2015.	**Complete** – all Water Service facilities in Edmonton operate under a common Environmental Management system. Work progressed in 2020 focused on developing plans for implementing ISO14001 at EPCOR regional sites that were not registered and to begin the process of implementing management systems at these sites.
Complete E.L. Smith Solar Project and Smart Grid System – The E.L. Smith Solar Project is planned as a 12 MW solar farm that will provide renewable energy for water treatment plant operations. In conjunction, EWSI has received federal grant funding to build a Smart Grid	**On-going** – This project received final approval in October 2020 after considerable public and stakeholder consultation. Construction will commence in 2021.

INITIATIVE	Year End Status
System including a 4 MW battery energy storage system and micro-grid controls.	
Execute Green Energy Purchase Agreement – In addition to the E.L. Smith Solar project, another key component of Water Services' strategy to reduce its environmental footprint is to explore a competitive procurement for new renewable power from other Alberta sources for the remainder of the grid sourced electricity currently used by water operations.	**On-going** – In 2020, EPCOR Utilities Inc. signed an agreement with Renewable Energy Systems Canada ("RES") to develop and construct a new wind farm in southern Alberta. EPCOR will acquire the Renewable Electricity Certificates ("RECs") from the project for a 20 year term. The combination of this offtake agreement and the E.L. Smith Solar Farm will result in EPCOR Water utilizing 100% green electricity for all its operations within the City of Edmonton. Permitting activities are currently underway and the wind farm is expected to be constructed in summer 2022 with commercial operations commencing in Q4 2022.
Complete Edmonton Water System Renewal Approval	**Complete** – Edmonton water system approval renewed
Employee and Public Safety	
Move to Adopt ISO 45001 Across all Water Services Sites – Water Services has implemented and obtained registration to the OHSAS 18001 safety management system and is progressing to convert to the updated ISO 45001 safety management system to support continued safety performance improvement.	**On-going** – For its core Edmonton operations, Water Services has implemented and obtained registration to the OHSAS 18001 safety management system and is progressing to convert to the updated ISO 45001 safety management system to support continued safety performance improvement. EWC operations outside of Edmonton will be evaluated throughout 2021 to establish baseline requirements for conformance to the ISO 45001 standard.
Review Effectiveness of Safe Work Planning Across All Water Services Sites – Safe work planning includes implementing a field level hazard assessment that effectively identifies hazards and implements controls to prevent potential injury to employees, contractors and the public. Water Services will review safe work planning for all locations to strengthen hazard assessment and reinforce safety integration into routine and non-routine tasks.	**On-going** - EWSI continues to develop and implement company-wide assessments for six of the lifesaving rules and chemicals to effectively review existing procedures to ensure conformance to the EPCOR Standards and provincial legislative requirements
Employee Development	

INITIATIVE	Year End Status
All initiatives are detailed in the Common section above	
Operational Performance	
Develop a Standardized Approach to Asset Management Across Water Services by Confirming to ISO 55000 – The Asset Management Framework will be expanded and adapted to allow greater consistency in how it is applied across business units of Water Services by aligning with the international standard for asset management ISO 55000.	**On-going** – The Asset Management Methods Office has expanded and adapted the current Asset Management Framework to allow greater consistency in how it is applied across various Business Units of Water Services by aligning with the international standard for asset management, ISO 55000 including creation of a Strategic Asset Management Plan that outlines how Asset Management is to be approached across the business. These asset management plans formed a central input into the development of the 2022-2024/26 PBR capital plans.
Optimize Meter Reading Function – Water Services will seek to optimize the meter reading function through an analysis of current routing as well as the implementation of meter reading technologies to determine if they are viable from a cost benefit perspective. Analysis of the costs and benefits of introducing Automated Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) technology will be completed.	**On-going** – In 2020, Water Services completed the analysis of the costs and benefits of introducing AMI technology and incorporated the results of that analysis into a business case as part of the submission for the 2022-2026 PBR. The proposed implementation of an AMI network in Edmonton would utilize the existing EDTI communications backbone in order to provide a more cost effective solution than a stand-alone installation. If approved within the PBR, the project will be implemented between 2022 and 2024. Planning and design work will commence in 2021.
Develop a Bio-solids Strategy – Since the 1970's, biosolids have been sent to the Clover Bar lagoons for additional processing and disposal, mostly through composting, landfilling and agricultural land application. Over time, the inventory of biosolids in the lagoons have increased as disposal has not met production, to where there is more than 6 years of inventory stored in the lagoons. Additionally, the City of Edmonton made a decision to close down composting operations, due to the integrity of the facility. An overall strategy is required to address these concerns.	**In-progress** – In late 2019, the development of a biosolids management program which builds upon past strategies was started. The objectives of the program were to continue to finds ways to beneficially dispose of biosolids, in a financially and environmentally sustainable manner, while reducing the inventory of biosolids in the Clover Bar lagoons. Work in this strategy continued in 2020 and included the development of the PBR business case for the development of a dewatering facility.
Growth and Financial Performance	

INITIATIVE	Year End Status
All initiatives are detailed in the Common section above	

5.2 Drainage Services

Initiatives and Objectives	Year End Status
Customer Service	
Build relationships with stakeholders to create trust and understanding – Drainage Services will continue to build stakeholder engagement plans that are aligned with the capital plans.	**On-going** – In 2020, Drainage Services continued to ensure that stakeholder engagement plans were developed for all major capital projects. This included defining when and how to engage with stakeholders to ensure the largest impact. Work will continue in 2021 to ensure this approach optimized as new capital projects commence.
Build systems, processes and training to provide consistently good service that feels seamless to the customer - continue to evaluate sources of customer escalations and implement remedial actions; reduce the number of escalations and reduce customer service connection time.	**On-going –** through 2020, Drainage continued to focus on providing improved levels of customer services, as is evidenced in the supporting metrics: • Customer escalations were reduced by 2.4% in 2020 compared to 2019. Note**:** The target in 2020 was a 0 % decrease from prior year. • Customer service connection completion time for 2020 averaged 2.4 weeks versus the target of 5 weeks.
Execute Corrosion and Odour Mitigation Strategy – The Corrosion and Odour Reduction (CORe) Strategy was developed using similar principles and approaches to SIRP program in order to determine an optimized mix of operational and capital solutions to reduce corrosion and odour. The CORe Strategy expands the previous plan by focusing on preventing the formation of H_2S gas, which will reduce community odour impacts and lengthen the life of sewer network assets. The current strategy also differs from previous plans by segregating the City into regions with consistent	**In-progress –** a detailed review of the work completed in 2020 is contained in the 2022-2024 Drainage PBR Application and Appendix I2

Initiatives and Objectives	Year End Status
odour issues, those with dynamic odour issues, and those with emerging odour issues. Different approaches are proposed for each region to ensure that causes of the odour are fully understood and to ensure that capital projects will provide sustainable relief.	
Complete Drainage LRT Relocations - In 2018, Drainage Services received notifications from the City of Edmonton requesting Drainage Services to start sewer facility relocation for several LRT projects. The notifications indicated that the Valley Line West (VLW) and the Metro Line Northwest (NW) Phase 1 are the City's next two LRT priorities. Since receiving the City's notifications, Drainage Services has been diligently working on the LRT Drainage Relocation Projects. Drainage Services has undertaken corresponding investigations, planning and design works for the VLW LRT project.	**In-progress –** a detailed review of the work completed in 2020 is contained in the 2022-2024 Drainage PBR Application
Public Health and Environment	
Minimize Environmental Impact of Our Operations – As an environmental steward in Edmonton, Drainage Services will minimize our environmental impact in all aspects of our operations. Drainage Services has been working with the City of Edmonton on the climate change initiative through the work on the Stormwater Integrated Resource Plan (SIRP). The purpose of this plan is to identify work that needs to be accomplished to reduce the impact of stormwater flow on Edmonton residents and businesses.	**On-going** – Drainage Services continues to work towards ensuring that all environmental work is aligned with considerations arising from the SIRP, and Corrosion and Odour Mitigation (CORe) Strategies. The goal remains to reduce flow to the river.
Execute the Stormwater Integrated Resource Plan (SIRP) - As part of the agreement to transfer Drainage Services to EPCOR, EPCOR committed to developing a complete stormwater strategy to reduce flooding risks within the City of Edmonton for urban and riverine flooding events. Drainage Services has created the Stormwater Integrated Resource Plan (SIRP) project to integrate environmental and social externalities;	**In-progress –** a detailed review of the work completed in 2020 is contained in the 2022-2024 Drainage PBR Application and Appendix I1

Initiatives and Objectives	Year End Status
operational, planning and infrastructure responses; risk assessment and management; financial analysis; and an open participatory process that incorporates continuous improvement.	
Develop a Strategy to Address Total Loadings in the North Saskatchewan River - Prior to the transition to EPCOR, Drainage Services had developed the Total Loading Plan (TLP) based on a number of strategies developed to reduce and mitigate impacts on the North Saskatchewan River (NSR) and in alignment with its commitment to continual improvement and environmental stewardship. The plan proposed a number of capital projects and other initiatives to reduce loading to the NSR and tributaries. In 2019, Drainage Services updated the TLP, taking a closer look at targets and objectives of main environmental strategies, such are Sewer Separation, Discharge Improvement Zone, Low Impact Development, Watershed Management, and Interconnection Strategy, with the intent of aligning them with asset management needs and the SIRP.	**In-progress** – this initiative has been incorporated into the Proactive Residuals Strategy defined above under the Common Water and Drainage section. The overall goal is to develop a strategy for the continued reduction of residuals loading to the North Saskatchewan River irrespective of the originating business unit.
Employee and Public Safety	

Reduce Tolerance towards safety related risks - Develop customized safe work plans for each unique work area. Implement a new Contractor Management Program, including a framework and guidelines for managing prime contractor accountabilities **Cultivate a culture of Safety Leadership –** Ensure that incidents are reported accurately within our Event Reporting System (ERS), investigations are completed in a timely manner, and learnings are shared with all employees **Encourage ownership of safety at all levels –** This initiative includes: focus on hazard recognition and near miss reporting; training of all people leaders to lead an incident investigation; developing an observation program to identify workplace hazards and recommend controls; rolling out driver report cards based on telematics; implementing workplace inspections across Drainage Services.	**On-going** - as noted above in the drainage metrics section, Drainage Services has made significant progress in improving safety overall. The introduction of new safety metrics in 2020 that align with those in Water and Wastewater Treatment allows direct comparability with the other business units. Drainage Services exceeded all metrics and a number by a significant margin. This performance was the culmination of a number of programs including: • Safe work plans have been developed for each unique work area. Work is underway to integrate these into a Safe Work Plan App for use in the field. • The Contractor Management Program, including guidelines for managing prime contractor accountabilities and serious incident response plans, were updated and communicated to managers as required. • Initiatives intended to develop a strong safety culture continued including training for compliance and conformance, revision of process, near miss and other reporting metrics as well as programs to increase general awareness among staff. • Training of people leaders to lead incident investigations began in 2019 and continued into 2020. This will form a common approach for incident investigation. • The installation of fleet telematics was completed in December 2019. Monthly driver report cards are now being produced used by managers to ensure adherence to vehicle safety expectations. • Targets for workplace observations and inspections by managers and foremen were developed and are included in the 2020 work plan. The total 2020 target of 1,300 inspections was exceeded with actual inspections at 1,461.

Initiatives and Objectives	Year End Status
Train Staff for Competency and Confidence – This initiative includes creating and implementing Hazard Registries for all high risk work; establishing competency based assessments for high risk tasks; and implementing "EPCOR Athletes" – a program to learn about body mechanics and how to incorporate healthy movement into everyday tasks for both field works and office workers.	**On-going** - The EPCOR Learning and Development team began the development of the formal Competency Assessment Project in 2019. The roll out of the program commenced in 2020.
Employee Development	
All initiatives are detailed in the Common section above	
Operational Excellence	
Develop and optimize end-to-end processes within Drainage – Key objectives include identifying projects that either define or optimize cross-functional processes; deploying telematics to assess vehicle utilization and optimize our fleet; develop a program management model building on the team delivery approach piloted in the control structure program; complete the field technology recommendation that ensures field staff have the platform and connectivity; build an information systems strategy that defines the systems of record and system integration strategy.	**In-progress** – A comprehensive process review/improvement program continued in 2020 in order to identify improvement opportunities from an "end to end" perspective. The program supports the identification, facilitation and realization of benefits of/from improvement opportunities across the Plan-Design-Build-Operate business cycle in Drainage. There is a particular focus on hand-offs between and within areas as this is when there is the greatest risk of miscommunication, poor transfer of responsibilities, or a breakdown in work continuity. Initial scoping of similar opportunities related specifically from Drainage Services' move to the Aurum facility also commenced in 2020. These opportunities are related to the synergies that would result from co-locating water D&T and Drainage Services in a common facility.
Identify and manage emerging risks – This initiative includes implementing a knowledge transfer program to mitigate the risk of losing technical expertise as well as addressing findings from internal audits to mitigate operational risks.	**On-going** – Drainage continues to review and update operating procedures to ensure system knowledge is captured. The Operations and Maintenance internal audit was completed in November 2019 and the findings were addressed through 2020.
Growth and Financial Performance	

Initiatives and Objectives	Year End Status
Correct the revenue leakage that is occurring - In 2019, Drainage Services began an audit of the Stormwater Utility. Through the initial analysis, the stormwater team found multiple discrepancies in the billing system due to a number of factors including lack of auditing since system inception in 2003, lack of written standards, information system limitations and billing system limitations.	**In Progress –** work continued through 2020 to address the issues identified in the original audit. A number of areas were corrected while others have been postponed pending the transition to a new bylaw in 2022. A comprehensive analysis of City of Edmonton properties was completed – currently under discussion with City Administration.

Appendix A: PBR Plan 2017-2021

A.1 In-City Water and Wastewater

A.1.1 PBR Framework

EWSI's In-City Water and Wastewater rates for the 2017-2021 PBR term are regulated by Edmonton City Council in accordance with the PBR Plan approved in Bylaw 17698. This plan encompasses rates, performance measures, and return on equity. The relationships between these components are designed to ensure that capital and operating cost decisions provide a balance between operational performance, rates, and return on equity, while safeguarding system reliability and service quality, providing fair, stable, predictable rates to rate payers, and providing a basis for the future development of the water and wastewater treatments system.

- **PBR Rates.** Annual changes to In-City Water and Wastewater rates are limited to inflation, less an efficiency factor, plus Special Rate Adjustments and, in rare cases, Non-Routine Adjustments. The use of a formulaic approach for calculating and setting utility rates acts as a "price cap" providing ratepayers with stable and predictable rates. The efficiency factor, set at 0.25% for the 2017-2021 PBR term, requires EWSI to increase productivity and achieve efficiencies in excess of inflation if it is to meet it targeted return on equity.

- **Performance Measures.** EWSI's PBR framework includes performance measures for water and wastewater treatment system service quality as described in Schedule 3, Sections 3 and 4 of the Bylaw. EWSI faces financial penalties if it does not meet or exceed performance measure standards, providing assurance to customers that water and wastewater treatment system service quality will not be sacrificed to keep rates low or increase returns to EWSI. EWSI's performance measures are audited annually by an independent accounting firm.

- **Return on Equity.** The PBR plan incorporates a forecast rate of return on equity commensurate with consumption, cost and other risks that allows EWSI to finance its operational and capital programs, to provide its customers with high levels of service quality and reliability, and to provide "just and reasonable" returns to its shareholder. Achieving this return is dependent on EWSI achieving operating cost efficiencies, meeting or exceeding performance standards, and developing the utility infrastructure needed to provide service to its customers. For the 2017-2021 PBR term, returns on equity are based on a deemed capital structure of 60% debt and 40% equity and a 10.175% rate of return on equity.

A.1.2 Risks and Incentives

The PBR framework provides incentives for EWSI to improve operational performance while achieving cost savings through process improvements and other means. Under this framework, EWSI also assumes the risks associated with water consumption, operating costs, financing costs and capital costs, ensuring that customers are provided with stable and predictable rate increases. These risks and EWSI's strategies to mitigate them include:

- **Water Consumption Risk.** Under PBR, EWSI bears all of the risks associated with weather-related fluctuations in water consumption and water quality, as well as the longer-term risks associated with declining consumption per customer. EWSI seeks to mitigate consumption risk through the use of robust forecasting methodologies incorporating long term trends in water consumption.

- **Operating Cost Risk**. EWSI actively works to minimize fluctuations in input prices through long-term power contracts, chemical optimization processes, and continuous efforts to implement cost reduction strategies in all areas of its operations.

- **Interest Risk**. Fluctuations in short-term interest rates, long-term debt issue costs and in the level of capitalized interest have significant impacts on EWSI's net income and return on equity. EWSI mitigates interest risk through timing of long-term debt issuances and optimizing working capital.

- **Capital Cost Risk.** In-City Water and Wastewater's operations are capital intensive and it is often difficult to forecast required levels of capital replacements, both at the plants and in the water distribution and transmission network. EWSI seeks to minimize these risks through comprehensive capital project and asset management programs, ensuring that new projects or changes to existing projects are justified and that there is an appropriate level of management, senior management and executive oversight over capital spending.

A.1.3 Customer Classes and Rate Structure

A.1.3.1 In-City Water

In-City Water rates consist of fixed monthly service charges that vary with meter size and variable charges applied to each cubic metre of water consumed. Consumption charges differ for each of In-City Water's customer classes. These classes and their rate structures include:

- **Residential Customer Class.** Residential customers are charged based on an inclining rate structure with three consumption blocks. The inclining rate structure is intended to promote water conservation and provide incentives for residential customers to use water efficiently.

- **Multi-Residential Customer Class.** Multi-residential customers are charged based on a declining rate structure with three consumption blocks. EWSI has found that the cost of providing water to individual multi-residential customers declines as the size of the multi-residential building increases. As well, there is a wide range of consumption volumes for multi-residential customers. Accordingly, a declining rate structure best reflects the cost characteristics of this customer class.

- **Commercial Customer Class.** Similar to multi-residential customers, commercial customers are charged based on a declining rate structure, but with five consumption blocks to recognize the wide range of average consumption volumes within this customer class.

The 2017-2021 PBR Plan includes three Special Rate Adjustments for In-City Water:

- **Special Rate Adjustment for Rebasing**. The In-City Water revenue requirement was rebased at the beginning of the 2017-2021 PBR term. The resulting rebasing adjustment to rates includes the on-

going benefits to rate-payers of efficiency gains realized in the 2012-2016 PBR term, the impacts of higher than forecast capital expenditures during the 2012-2016 PBR term; and increases in the capital expenditure programs for the 2017-2021 PBR term. Also included in the rebasing adjustments is the impact of EWSI's cost of service study which has resulted in redistribution of revenue requirements from the Residential and Multi-Residential customer classes to the Commercial customer class.

- **Special Rate Adjustment for Accelerated Programs.** These Special Rate Adjustments support the acceleration of the replacement of water mains as part of the City of Edmonton's neighbourhood renewal program and the upgrade of water mains to increase fire protection capacity in neighbourhoods experiencing increased densities as a result of infill development.
- **Special Rate Adjustments for Environmental Programs.** EWSI is undertaking two significant environmental initiatives during the 2017-2021 PBR term. The first initiative is an extensive River Monitoring Project to regularly monitor, evaluate and report on a number of water quality variables from several sampling sites in the river for 2018-2021. This program is forecast to have annual costs of $1.0 million starting in 2018. The second initiative, which aligns with the City's *"The Way We Green"* strategy, is a Green Power Initiative to replace approximately 10% of EWSI's total power volumes with energy from locally produced renewable sources starting in 2018. This initiative is forecast to cost $1.9 million annually commencing in 2018.

A.1.3.2 Wastewater Treatment

Wastewater treatment rates consist of fixed monthly service charges that are applied equally to each customer and variable charges applied to each cubic meter of water consumed. Wastewater has two customer classes:

- **Residential Customer Class.** Unlike In-City Water, there are no separate rates for multi-residential customers. Instead, customers who would be multi-residential water customers are subject to the same rates as residential wastewater customers. The common rate structure for residential and multi-residential customers recognizes that the costs of wastewater treatment are very similar for residential and multi-residential customers. Accordingly, charges to Residential customers are based on a flat rate structure with a single consumption block.

- **Commercial Customer Class.** Consumption charges for commercial customers are based on a declining rate structure with three consumption blocks to recognize that there are economies of scale in wastewater treatment for larger commercial customers. In addition, commercial customers are charged overstrength fees for prescribed materials that exceed the concentrations shown in Section 4 of Schedule 1 to Bylaw 17698.

The 2017-2021 PBR Plan includes a single special rate adjustment for rebasing. Similar to In-City Water, Wastewater's revenue requirement was rebased at the beginning of the 2017-2021 PBR term to reflect efficiency gains realized in the 2012-2016 PBR term, as well as the substantial increases in capital spending needed to deal with the challenges of the aging infrastructure at the Gold Bar Wastewater Treatment Plant.

A.2 Drainage

A.2.1 PBR Framework

EWSI's Drainage rates for the 2018-2022 PBR term are regulated by Edmonton City Council in accordance with the PBR Plan approved in the EPCOR Drainage Services Bylaw 18100. Similar to In-City Water and Wastewater, Drainage's 2018-2022 PBR plan encompasses rates and performance measures, but the mechanisms used to achieve a balance between rates and operational performance differ in important respects, as follows:

- **PBR Rates.** Bylaw 18100 prescribes drainage fees and charges for the period from January 1, 2018 to March 31, 2022. These fees and charges reflect EWSI's commitment to limit average annual rate increases to 3%. Besides these scheduled rate increases, Bylaw 18100 also includes a mechanism for non-routine adjustments to rates related to emergent City-directed needs.

- **Performance Measures.** Bylaw 18100 requires Drainage to measure operational performance for the period from January 1, 2018 to December 31, 2019 using performance measures for drainage system service quality modeled after previous City Drainage Services quality metrics. After that time, for the remainder of the 2018-2021 PBR term, Drainage's operational performance will be measured against new performance measures that will be developed Drainage and approved by the Utility Committee. Similar to Water and Wastewater, the new performance measures have a scoring system with financial penalties applied if Drainage does not meet or exceed performance standards. As with Water and Wastewater Treatment, the performance measures scorecard will be audited annually by an independent accounting firm.

A.2.2 Customer Classes and Rate Structure

Drainage has Residential, Multi-Residential and Commercial Customer classes, using the same customer definitions as Water. Drainage's rate revenues are derived from both Sanitary Utility and Stormwater Utility services.

- Drainage has a simple rate structure, with flat monthly service charges varying only by meter size regardless of customer class and the same monthly variable rate per cubic meter applicable to all customers, regardless of customer class, except the University of Alberta which has a unique rate, intended to recognize its lower servicing cost.
- Stormwater Utility revenues are based on the area of the customer's property, development intensity, and zoning, also with common rates regardless of customer class.